43002

Sundstrand Corporation

CORPORATE OFFICES • 4949 HARRISON AVENUE, P.O. BOX 7003 • ROCKFORD, ILLINOIS 61125-7003 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 25-7440

July 24, 1990

Ms. Karen Vendl
U.S. Environmental Protection Agency (5HS-11)
230 South Dearborn Street
Chicago, Illinois 60604

Re: Supplemental Request for Information Pursuant to Section 104(e) of CERCLA and Section 3007 of RCRA for Southeast Rockford Groundwater Contamination Site in Rockford, Illinois

Dear Ms. Vendl:

This is in response to the United States Environmental Protection Agency's ("USEPA") request for information pursuant to Section 104(e) of CERCLA and Section 3007 of RCRA dated June 22, 1990. Attached are responses to the requests contained in the USEPA's letter. If any should prove to be incomplete, we will supplement as further information is discovered as required in instruction #4 attached to the information requests.

Sundstrand Corporation hereby objects to this request for information on the grounds that the request is overbroad, extends beyond authority under RCRA and CERCLA, and seeks information which is not relevant to an investigation concerning the Southeast Rockford Site. None of the responses supplied shall be construed as an admission on the part of Sundstrand Corporation or any of its divisions in connection with this request.

Sundstrand reserves the right to change, modify or supplement the statements made and documents contained within this response. Please contact me if you have further questions or require further information at (815) 226-6880.

Very truly yours,

SUNDSTRAND CORPORATION

Linda Szempruch Aylward

Linda Szempruch Aylward
Senior Associate Attorney

Attachments

RESPONSES

1. Persons who assisted in answering the questions include: Bill Benton, Don Burchard, Mark Chiado, Darrell Cowan, George Duncan, Mark Fransen, Jerry Hendrickson, Jack Johnson, Ron Johnson, Paul Kroh, Jeff Lindstrom, Dick Martin, Bob Miller, Tom Monti, Al Munn, Ted Parkinson, Jeff Sanders, Ron Waxler, Len Ashlin, Clem Dreher, Larry Zimbelman, Michael Barcellona, Dave Bippus, Greg Hills, Joe Sarff and Richard Theden.

2. See Attachments.

3.a. Selected Material Safety Data Sheets (MSDS's) are provided as Attachment 1 to this response. Out of the numerous MSDS's for materials which Sundstrand uses at Plants 7 and 8, we have provided the major categories of materials which may be classified as hazardous. Because of the sheer volume of MSDS's which are responsive to this request, we will make our MSDS's available for your examination at your convenience during business hours. See Attachment 2 for a comprehensive list of all materials used at Plants 7 and 8.

b. The following materials used at Plants 7 and 8 are or contain "hazardous substances" as defined by CERCLA Section 101(14), 72 U.S.C. Section 9601(14): otto fuel II (contains 2-nitrodiphenylamine), hydrazine, sodium hydroxide, sulfuric acid, potassium hydroxide, mercury, dykem staining colors (contains -N-butyl acetate), freon TMC #630 (contains methylene chloride), solvent degreaser (contains methylene chloride), 1, 1, 1 trichloroethane, and glyptal (contains xylene).

c. Plant 7 is primarily a wind tunnel facility dedicated to testing of ram air turbines (R.A.T.'s) for a variety of aircraft. Part of Plant 7 is used for equipment storage.

- Manufacturing processes that generated by-products or waste:

None. Used for testing only.

- Maintenance operations that generated by-products or waste:

Cleaning, maintenance of hydraulic fluid levels, mopping, lubrication, and oiling.

Plant 8 is used for the testing of various aerospace components.

- Manufacturing processes that generated by-products or waste:

None. Used for testing only.

-continued-

- Maintenance operations that generated by-products or waste:
  Cleaning, maintenance of hydraulic fluid levels, mopping, lubrication, and oiling.

d. Plant 7:
- By-products and wastes generated by Plant 7:
  Waste solvents, waste hydraulic fluid.

Plant 8:
- By-products and wastes generated by Plant 8:
  Exhaust gases, oil and water mixture, waste solvents, and flammable liquids.

4. a. Solvents
Most solvents are only used for cleaning of high precision parts where very low residue cleaning agents are necessary. Materials are handled as required in accordance with applicable standards, practices and local, state and federal regulations and statutes.

Oils
Oils are used for metal cutting, as coolants, or as lubricants. Materials are handled as required in accordance with applicable standards, practices and local, state and federal regulations and statutes.

Fuels
Fuels are used for testing and or calibration. Materials are handled as required in accordance with applicable standards, practices and local, state and federal regulations and statutes.

Plating Chemicals
These chemicals are used for either plating or circuit board manufacturing. Materials are handled as required in accordance with applicable standards, practices and local, state and federal regulations and statutes.

Photographic Materials
These materials are used in film development and other photographic processes. Materials are handled as required in accordance with applicable standards, practices and local, state and federal regulations and statutes.

b. Materials are handled on an as-needed basis or when deemed necessary and appropriate.

-continued

c. Materials are used throughout the various facilities in departments and areas requiring them. Materials are disposed of at approved, licensed facilities as required and transported in accordance with applicable standards, practices and local, state and federal regulations and statutes.

5. Attachments 3 through 5 contain information on all: (1) spills of hazardous substances with reportable quantities as defined by CERCLA and (2) those spills reportable under other Federal statutes.

Attachment 3 contains responses to question 5 based on interviews with current and former Sundstrand employees. No further documentation exists for the suspected releases described in Attachment 3.

Attachment 4 contains a list referencing events for which no further documentation exists.

Attachment 5 contains complete documentation on all other: (1) spills of hazardous substances with possible reportable quantities as defined by CERCLA, and (2) those spills reportable under other Federal statutes.

Further documentation concerning the 1984 Toluene spill at Plant 6 and the suspected underground tank release at 2210 Harrison Avenue is contained in Attachments 6 through 9.

6. Persons who may have knowledge or information about generation, transportation or other handling of hazardous substances at Sundstrand/Rockford include the following current and former employees: Bill Benton, Don Burchard, Mark Chiado, Darrell Cowan, George Duncan, Mark Fransen, Jerry Hendrickson, Jack Johnson, Ron Johnson, Paul Kroh, Jeff Lindstrom, Dick Martin, Bob Miller, Tom Monti, Al Munn, Ted Parkinson, Jeff Sanders, Ron Waxler, Len Ashlin, Clem Dreher, Larry Zimbelman, Michael Barcellona, Dave Bippus, Greg Hills, Joe Sarff and Richard Theden.

7. Attachment 6 contains data regarding remediation and testing concerning the 1984 Toluene spill. The monitoring well on Rutgers Place is designated as MW-34. The monitoring well on Brandeis Drive is designated as MW-33.

Attachment 7 contains reports completed to date concerning the 1984 Toluene spill. The report prepared by EDI Engineering & Science is dated August 1989, not April, 1989 as was indicated in question #7.

-continued-

Attachment 8 contains reports completed to date concerning the possible release from underground storage tanks at 2210 Harrison Avenue (Suntec).

8. Attachment 9 contains work plans by Harding Lawson and Associates regarding the Toluene spill at Plant 6 and by Geraghty and Miller , Inc. regarding the possible release from underground storage tanks at 2210 Harrison Avenue.

Harding Lawson Associates replaced EDI Engineering & Science in October, 1989 as our consultants on the Plant 6 Toluene spill. Harding Lawson plans to issue a report in the near future regarding the offsite wells MW-33 and MW-34.

AFFIDAVIT

The information contained as attached in the 104(e) response letter dated July 24, 1990, to the U.S. Environmental Protection Agency (U.S. EPA) concerning the Southeast Rockford Site and waste materials generated and disposed of by Sundstrand Corporation is hereby certified as true and accurate to the best of signatory's knowledge and belief. The documents enclosed as exhibits hereto are hereby certified to as true and authentic to the best of the signatory's knowledge and belief. Should the signatory find at any time after the submittal of the requested information that any portion of the submitted information may be incorrect or inaccurate, the undersigned shall so notify the U.S. EPA. Furthermore, the undersigned hereby continues its reservation of the right to change, modify or supplement the statements and documents contained within the Section 104(e) response.

Dated: July 24, 1990.

By: _____
Richard M. Schilling
Vice President and
General Counsel and
Secretary

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Naval Ordinance Station	(301) 743-4421
ADDRESS *(Number, Street, City, State, and ZIP Code)* Indianhead Maryland 20640	
CHEMICAL NAME AND SYNONYMS Propylene Glycol Dinitrate Plus Additives	**TRADE NAME AND SYNONYMS** Otto Fuel II
CHEMICAL FAMILY Nitrate Propellant	**FORMULA** $C_3H_6(NO_3)_2$ Plus Additives

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Propylene Glycol Dinitrate	76	0.2ppm
2-Nitrodiphenylamine	1.5	
Di-N-Butyl Sebecate	22.5	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	Decomposes	SPECIFIC GRAVITY (H_2O=1) @ 25°F	1.232
VAPOR PRESSURE (mm Hg.) @ 25°C	.0877	PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	Red Orange Liquid with Sweet Pungent Odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
265°F (COC)			

EXTINGUISHING MEDIA
Water from a fog-type nozzle or carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES
Otto Fuel contains its own oxidizer and fire cannot be smothered. Water will float on top and cool the reaction.

UNUSUAL FIRE AND EXPLOSION HAZARDS
If highly confined and heated above its decomposition temperature, explosive reactions may occur.

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
0.2 ppm

EFFECTS OF OVEREXPOSURE
Nasal irritation and congestion, headache which lasts for several hours, nausea may develop, chronic effects not known.

EMERGENCY AND FIRST AID PROCEDURES
Move from contaminated area into fresh air, apply artificial respiration if breathing has stopped, remove contaminated clothing and wash contaminated skin with soap and water, induce vomiting if ingested, flush eyes with water, obtain medical aid.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
Not classified as explosive	UNSTABLE		
	STABLE	X	Heating above decomposition temp., 295°F

INCOMPATABILITY *(Materials to avoid)*
Copper base alloys

HAZARDOUS DECOMPOSITION PRODUCTS
Some hydrogen cyanide produced when decomposed without oxygen.

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Contain the spill, small spills may be absorbed into rags or other absorbent material, large spills collected into drums or other containers, wash area with detergent-water solution.

WASTE DISPOSAL METHOD
Dispose of contaminated Otto Fuel and materials contaminated with Otto Fuel in an approved incinerator.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Positive pressure air breathing equipment

VENTILATION		
	LOCAL EXHAUST: Required when handling	SPECIAL: None
	MECHANICAL *(General)*	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Neoprene or polyethylene	Full face shield

OTHER PROTECTIVE EQUIPMENT
Neoprene aprons, neoprene or polyethylene boots for spill cleanup

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Store in shipping container, protected from direct sun rays, temperature should be kept below 140°F, classified as Group G propellant, observe quantity-distance requirements.

OTHER PRECAUTIONS
Refer to NAVORD OP 3368, Otto Fuel II Safety, Storage and Handling

Form OSHA-20
Rev. May 72

OTTO FUEL II

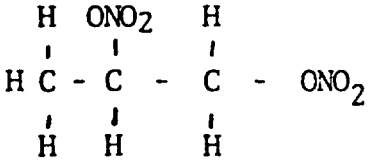
Chemical Composition

OTTO Fuel II is a stable liquid monopropellant composed of a nitrate ester in solution with a desensitizing agent and stabilizer. The chemical composition and molecular structure of OTTO Fuel II is given below:

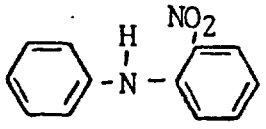
OTTO FUEL II

Propylene glycol dinitrate (PGDN) (1, 2 dinitroxigl propane)	76%
2-nitrodiphenylamine (2NDPA)	1.5%
Di-n-butyl selicate (DBS)	22.5%

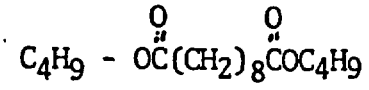
(PGDN) - $H_3CHCONO_2H_2CONO_2$ Molecular Weight = 166



(2NDPA)- $H_5C_6NHC_6H_4NO_2$ Molecular Weight = 214



(DBS) $H_9C_4O_2C(CH_2)_8CO_2C_4H_9$ Molecular Weight = 314



General Appearance

OTTO Fuel II is a bright red, free-flowing oily liquid which is heavier than water.

Chemical Nature

OTTO Fuel II is noncorrosive and possesses an extremely low vapor pressure, which minimizes the explosive and toxic hazard. OTTO Fuel II can be made to detonate, but the conditions and stimulus required are so extreme that it is considered a non-explosive. The propellant has a high flame point and other safety characteristics which permit it to be classified as a low fire hazard material.

Solubility

All components of OTTO Fuel II are insoluble in water, therefore, spill washdown with water does not leave an explosive residue.

Stability

The decomposition of OTTO Fuel II is continuous and dependent upon time and temperature. The funciton of the stabalizing material in OTTO Fuel II is to control this decomposition rate so that the fuel can remain a usable material for as long as possible. In controlling the rate of decomposition, the stabalizer reacts with the products of the nitrate ester decomposition. The products of this reaction are only slightly soluble in OTTO Fuel II. If a precipitate appears in OTTO Fuel II, indicating that unusual decomposition rates have occurred, it should be brought to the attention of the cognizant authority, even though it does not present an immediate hazard.

In normal circumstances, the unusual decomposition conditions will never be observed. Tests have shown that the fuel is thermally stable at temperatures up to 150°F for several years, up to 180°F for a few months, and up to 250°F for 30 minutes. Above 250°F, there is serious danger of self-heating and decomposition. At temperatures exceeding 290°F, rapid self-heating and decomposition of the fuel will occur with container rupture and fire is a very likely consequence.

Physical Properties of OTTO Fuel

Table 1 below lists the physical properties of OTTO Fuel. OTTO Fuel II is heavier, less volatile, and slightly more viscous than water or ethyl alcohol. OTTO Fuel II, compared with water, has a lower freezing point and about half the surface tension. The low flammability of OTTO Fuel II is evident when compared to ethyl alcohol.

TABLE I

Physical Properties of OTTO Fuel II Compared With Common Liquids

Property	OTTO Fuel II	Water	Ethyl alcohol
Density	1.232 g/ml at 77°F	1.000 g/ml at 40°F	0.7950 g/ml at 77°F
Fire point (Cleveland open cup)	265°F	- -	70°F[1]
Freezing point	-18.4°F	32°F	-174°F
Surface tension	34.45 dynes/cm at 77°F	71.97 dynes/cm at 77°F	22.75 dynes/cm at 68°F
Vapor pressure	0.0877 mm Hg at 77°F	23.75 mm Hg at 77°F	46.75 mm Hg at 68°F
Viscosity	4.04 cp at 77°F	1.0 cp at 68°F	1.2 cp at 68°F
Water saturation point	0.31% at 77°F	- - -	Completely miscible

[1]Flash point(open cup)

Hazards

Health

The medically active ingredient in OTTO Fuel II is primarily the nitrate ester. Nitrate esters are known for their acute effects, including nasal turgidity, blood pressure changes, headaches, and dyspnea. Personnel should not be exposed to OTTO Fuel II vapor concentrations in excess of 0.2 ppm (1.3 mg/m^3). Individuals vary in their sensitivity to air concentrations of OTTO Fuel II.

Explosion

OTTO Fuel II can be detonated when a sufficiently strong booster is employed. Safety tests including drop tests, projectile impact tests, bullet impact tests and card gap tests have resulted in its classification as non-explosive.

Fire

OTTO Fuel II is classified as Liquid Propellant Hazard Group I, a relatively low fire hazard, by military service regulations. Group I materials are considered to be the least hazardous of the liquid propellants. Since they have a fire hazard potential, some separation distance is required.

Safety and Handling Characteristics

The safety and handling characteristics of OTTO Fuel II are acceptable for shipboard and submarine applications. The hazards usually associated with other propellants are minimal for OTTO Fuel II.

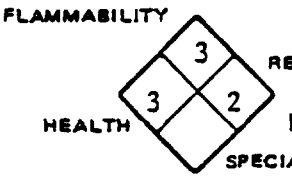
Toxic Hazards

Toxic effects may occur from the inhalation of OTTO Fuel II vapors, absorption from direct skin contact, or ingestion. Severity of these effects may vary with the concentration, length of exposure and temperature of the propellant. In the event of overexposure to OTTO Fuel II, immediately remove personnel from the contaminated area and into the fresh air. If symptoms persist, obtain medical attention as soon as possible.

Olin

EMERGENCY PHONE (203) 356-2345

Corporation, 120 Long Ridge Road
nford, Conn. 06904



MATERIAL SAFETY DATA

SECTION I – IDENTIFICATION

CHEMICAL NAME & SYNONYMS		
Anhydrous Hydrazine		
CHEMICAL FAMILY	FORMULA N_2H_4	TRADE NAME Anhydrous Hydrazine
DESCRIPTION Clear liquid with an ammonia-like odor.		CAS NO. 302-01-2

SECTION II – NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Do not get in eyes, on skin, or on clothing. Do not take internally. Avoid breathing mist or vapor. Protect against physical damage. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquid storage room or cabinet. Separate from oxidizing materials. Tanks should be located in a diked area. Protect against electrical sparks, open flames or any heat source. Store under a nitrogen atmosphere.

CORROSIVE ACTION ON MATERIALS (Metals, Plastic, Rubber, Etc.)

PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
Eyes Goggles Gloves Butyl rubber Other Coveralls, boots and butyl rubber apron.	As required to keep airborne concentrations below TLV.

SECTION III – HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROX. %	OSHA PEL	LD 50	LC 50	SIGNIFICANT EFFECTS

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD	OSHA CLASSIFICATION	FLAMMABLE EXPLOSIVE LIMITS	LOWER	UPPER
$100^{o}F$	Class II Flammable liquid		4.7	100

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, water. Flood with water to prevent reignition and to keep fire exposed container cool.

SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES: Use NIOSH/MSHA approved self-approved breathing apparatus where this material is involved in a fire.

SECTION V – HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 0.1 ppm TWA, 0.1 ppm STEL (skin) (ACGIH).

SYMPTOMS OF OVER EXPOSURE: Dizziness, nausea, irritation and burns of eyes, skin and mucous membranes.

EMERGENCY FIRST-AID PROCEDURES

SKIN	Flush with water for 15 minutes, call a physician.
EYES	Flush with water for 15 minutes, call a physician.
INGESTION	Drink large amounts of water immediately. Induce vomiting by sticking finger down throat. Call a physician.
INHALATION	Remove victim to fresh air, call a physician.

Chemical Anhydrous Hydrazine CAS No. 302-01-2

CHEMICAL NAME Anhydrous Hydrazine

SECTION VI – TOXICOLOGY (Product)

ACUTE ORAL LD 50	60 mg/kg (rat)	CARCINOGENIC	Suspect carcinogen
		MUTAGENIC	Positive Ames test
ACUTE DERMAL LD 50	91 mg/kg (rabbit)	EYE IRRITATION	Corrosive
		PRIMARY SKIN IRRITATION	Corrosive
ACUTE INHALATION LC 50	570 ppm/4 hours (rats)		

PRINCIPAL ROUTES OF ABSORPTION

Deraml, oral, inhalation.

EFFECTS OF ACUTE EXPOSURE Temporary blindness, dizziness, nausea, neurological changes. Damage to liver, lungs, kidney, blood and blood forming organs.

EFFECTS OF CHRONIC EXPOSURE Carcinogenic to laboratory animals, damage to liver, lungs, kidney, blood forming organs, skin sensitization and dermatitis. May cause fetal malformations.

SECTION VII – SPILL OR LEAKAGE PROCEDURES (Control Procedures)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Wear NIOSH/MSHA approved self-contained breathing apparatus. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134). Wear goggles, coveralls and butyl rubber gloves, boots and apron. Flush with large amounts of water and drain into a catch basin. Transfer into an approved DOT container and seal. Neutralize any remaining material with dilute hypochlorite solution and wash down with water. Destroy any contaminated leather articles. Wash all contaminated clothing before reuse. In the event of a massive spill, use the emergency phone number shown on the front of this sheet.

WASTE DISPOSAL METHOD

Dispose of clean-up debris, contaminated material and residues, in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII – REACTIVITY DATA

STABLE UNSTABLE AT ___ °C ___ °F		HAZARDOUS POLYMERIZATION	MAY OCCUR
			WILL NOT OCCUR

CONDITIONS TO AVOID Highly reactive. Will react with oxygen from air.

INCOMPATABILITY (Material To Avoid) Oxidizing agents, organic matter, Cu, Zn, Pb, stainless steel with more than 0.5% Mo, rust and other metal oxides.

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION IX – PHYSICAL DATA

MELTING POINT $2^{\circ}C$	VAPOR PRESSURE 20mm/Hg @ 30.7°	VOLATILES
BOILING POINT $113^{\circ}C$	SOLUBILITY IN WATER Soluble	EVAPORATION RATE
SPECIFIC GRAVITY (H_2O =1)	pH of 1% soln. = 9.9	VAPOR DENSITY(Air = 1) 1 @ $100^{\circ}F$

INFORMATION FURNISHED BY: C. J. Michaels DATE 7/10/80 (revised 1/12/81)

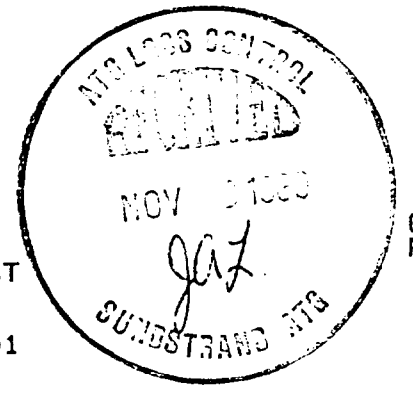
Department of Environmental Hygiene and Toxicology

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

EMERGENCY PHONE (203) 356 - 2345

CAUSTIC SODA 50% REVISION OF: 08-27-89



SHIP TO:

35138178
SUNDSTRAND CORP
ATTN: ENVIRONMENTAL ANALYST
9TH ST DOCK
2421 11TH ST
ROCKFORD IL 61101

ORDER NO: 350514138
PROD NO: 04148808

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: CAUSTIC SODA LIQUID
COMMON NAMES/SYNONYMS: SODIUM HYDROXIDE SOLUTION; LYE SOLUTION; SODA LYE

CAS NO.: 1310-73-2
VW&R CODE: P1377

FORMULA: NA O H
HAZARD RATING (NFPA 49)
HEALTH: 3
FIRE: 0
REACTIVITY: 1
SPECIAL: NONE

DATE ISSUED: 08/89
SUPERCEDES: 04/89
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, MG/M3 OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
SODIUM HYDROXIDE	1310-73-2	10-50	2	2 (CEILING)	NONE	CORROSIVE; TOXIC
WATER	7732-18-5	BALANCE	NONE	NONE	NONE	NONE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: SEE BELOW
MELTING POINT, DEG F: SEE BELOW
SPECIFIC GRAVITY (WATER=1): SEE BELOW
APPEARANCE AND ODOR:
WATER-WHITE TO SLIGHTLY TURBID SOLUTION; NO ODOR

VAPOR PRESSURE, MM HG/20 DEG C: 1
VAPOR DENSITY (AIR=1): N/A
WATER SOLUBILITY, %: 100
EVAPORATION RATE (BUTYL ACETATE=1): N/A

	SODIUM HYDROXIDE, %: 10	18	20	25	30	33	50
BOILING POINT, DEG F:	218	224	226	232	240	246	288
FREEZING POINT, DEG F:	10	-20	-16	-2	32	42	50
SPECIFIC GRAVITY: (WATER =1)	1.11	1.20	1.22	1.27	1.33	1.36	1.53

FIRST AID MEASURES

INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 30 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY FLUSH SKIN WITH LOTS OF RUNNING WATER FOR 30 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS ARE EXTREMELY CORROSIVE TO THE NOSE, THROAT, AND MUCOUS MEMBRANES. BRONCHITIS, PULMONARY EDEMA, AND CHEMICAL PNEUMONITIS MAY OCCUR. IRRITATION, COUGHING, CHEST PAIN, AND DIFFICULTY IN BREATHING MAY OCCUR WITH BRIEF EXPOSURE WHILE PROLONGED EXPOSURE MAY RESULT IN MORE SEVERE IRRITATION AND TISSUE DAMAGE. BREATHING HIGH CONCENTRATIONS MAY RESULT IN DEATH.

EYE CONTACT: VAPORS, LIQUID, AND MISTS ARE EXTREMELY CORROSIVE TO THE EYES. BRIEF CONTACT OF THE VAPORS WILL BE SEVERELY IRRITATING. BRIEF CONTACT OF THE LIQUID OR MISTS WILL SEVERELY DAMAGE THE EYES AND PROLONGED CONTACT MAY CAUSE PERMANENT EYE INJURY WHICH MAY BE FOLLOWED BY BLINDNESS.

SKIN CONTACT: VAPORS, MISTS, AND LIQUID ARE EXTREMELY CORROSIVE TO THE SKIN. MISTS WILL SEVERELY IRRITATE THE SKIN AND LIQUID AND MISTS WILL SEVERELY BURN THE SKIN. PROLONGED LIQUID CONTACT WILL BURN OR DESTROY SURROUNDING TISSUE AND DEATH MAY ACCOMPANY BURNS WHICH EXTEND OVER LARGE PORTIONS OF THE BODY.

SWALLOWED: VAPORS, MISTS, AND LIQUID ARE EXTREMELY CORROSIVE TO THE MOUTH AND THROAT. SWALLOWING THE LIQUID BURNS THE TISSUES, CAUSES SEVERE ABDOMINAL PAIN, NAUSEA, VOMITING, AND COLLAPSE. SWALLOWING LARGE QUANTITIES CAN CAUSE DEATH.

CHRONIC EFFECTS OF EXPOSURE: MAY RESULT IN AREAS OF DESTRUCTION OF SKIN TISSUE OR PRIMARY IRRITANT DERMATITIS. SIMILARLY, INHALATION OF DUSTS, VAPORS, OR MISTS MAY CAUSE VARYING DEGREES OF DAMAGE TO THE AFFECTED TISSUES AND ALSO INCREASING SUSCEPTIBILITY TO RESPIRATORY ILLNESS.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

NO DATA FOUND FOR THE LIQUID; HOWEVER, FOR SODIUM HYDROXIDE:

ORAL: RAT LD50 = 140-340 MG/KG

DERMAL: RABBIT LD50 = 1,350 MG/KG

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAIN-

INING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

IRATORY PROTECTION: WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THE VAPOR OR MIST CONCENTRATION AT THE POINT OF USE. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR DUST/MIST FILTERS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACESHIELD UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: ALKALI-RESISTANT SLICKER SUIT WITH RUBBER APRON, RUBBER BOOTS WITH PANTS OUTSIDE, AND RUBBER GLOVES WITH GAUNTLETS.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: NONE
METHOS USED: NOT APPLICABLE

FLAMMABLE LIMITS IN AIR, %
LOWER: NOT APPLICABLE
UPPER: NOT APPLICABLE

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION SINCE FLAMMABLE HYDROGEN GAS WILL BE LIBERATED FROM CONTACT WITH SOME METALS.

HAZARDOUS REACTIVITY

STABILITY: STABLE

POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NONE

MATERIALS TO AVOID: ACIDS, COMBUSTIBLE MATERIALS, AND METALS SUCH AS ALUMINUM, TIN, GALVANIZED ZINC, BRASS, AND BRONZE. ALSO AVOID MANY ORGANIC CHEMICALS, ESPECIALLY NITROCARBONS, LEATHER AND WOOL, AND ORGANIC ACIDS AND THEIR ANHYDRIDES. THIS PRODUCT MAY ALSO REACT WITH VARIOUS SUGARS TO FORM HAZARDOUS CARBON MONOXIDE.

HAZARDOUS DECOMPOSITION PRODUCTS: GENERATES HAZARDOUS MIST AT BOILING POINT, 218-288 DEG F. FLAMMABLE HYDROGEN GAS WILL BE LIBERATED UPON CONTACT WITH METALS SUCH AS ALUMINUM, TIN, OR ZINC.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR ALKALI-RESISTANT SLICKER SUIT AND COMPLETE PROTECTIVE EQUIPMENT INCLUDING RUBBER GLOVES, RUBBER BOOTS, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED WITH HIGH EFFICIENCY PARTICULATE FILTERS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. REMOVE ALL SOURCES OF IGNITION. FOR SMALL SPILLS AND DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND CAREFULLY NEUTRALIZE WITH DILUTE HYDROCHLORIC ACID. KEEP NON-NEUTRALIZED MATERIAL OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL.

NSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO
SCERTAIN PROPER DISPOSAL PROCEDURES.
E: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE
JECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. STORE AT TEMPERATURES ABOVE THE SOLUTION FREEZING POINT TO REMAIN LIQUID. REFER TO TABLE IN INGREDIENTS SECTION FOR APPROPRIATE FREEZING POINTS.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER. HAZARDOUS CARBON MONOXIDE GAS CAN FORM UPON CONTACT WITH FOOD AND BEVERAGE PRODUCTS IN ENCLOSED SPACES AND CAN CAUSE DEATH. DO NOT ENTER TANKS WHERE SUCH CONTACT IS SUSPECTED UNLESS THE ABSENCE OF CARBON MONOXIDE HAS BEEN CONFIRMED BY TESTS.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL. WHEN MIXING CAUSTIC SODA WITH WATER ALWAYS ADD CAUSTIC SLOWLY TO WATER AND STIR CONTINUOUSLY TO DISSIPATE THE HEAT OF DILUTION THAT IS FORMED. NEVER ADD WATER TO CAUSTIC SODA.

FOR ADDITIONAL INFORMATION

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

OTHER REGULATORY INFORMATION

DO NOT DETACH THIS SECTION FROM THE MSDS AND BE SURE TO INCLUDE THIS SECTION WHEN COPYING THE MSDS.

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL(S) SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

NAME	CAS NO.	%, WT.
SODIUM HYDROXIDE SOLUTION	1310-73-2	10-50

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONSIDERED BY THE STATE OF CALIFORNIA'S SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH WARNINGS ARE NOW REQUIRED:

CHEMICAL	CAS NO.	%, WT
ASBESTOS	1332-21-4	<0.075 PPM

NOTICE

VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS
ORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT

LATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER OCESS.

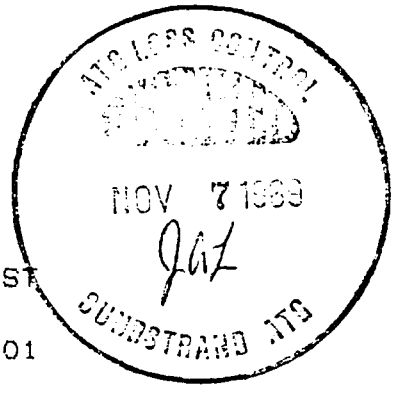
----------REVISION----------

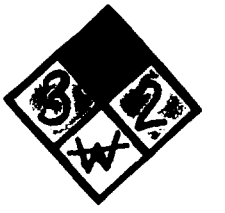
08/89: CHANGED HEADING AND CONTACT INFORMATION.

**** E N D O F M S D S ****

PROD: 04148808 16:28:14 01 NOV 1989 CUST: 35138178 INVOICE: 350514138

SULFURIC ACID 66 BE REVISION OF: 08-27-89





SHIP TO:

35138178
SUNDSTRAND CORP
ATTN: ENVIRONMENTAL ANALYST
9TH ST DOCK
2421 11TH ST
ROCKFORD IL 61101

ORDER NO: 350514137
PROD NO: 04717903

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: SULFURIC ACID CAS NO.: 7664-93-9
COMMON NAMES/SYNONYMS: SULFURIC ACID; VW&R CODE: T1361
OIL OF VITRIOL; SULFURIC ACID > 93%; SULFURIC ACID > 66 DEG BE;
SULFURIC ACID > 1.83 SPECIFIC GRAVITY
FORMULA: H2 S O4 DATE ISSUED: 08/89
HAZARD RATING (NFPA 49) SUPERCEDES: 12/88
HEALTH: 3 HAZARD RATING SCALE:
FIRE: 0 0=MINIMAL 3=SERIOUS
REACTIVITY: 2 1=SLIGHT 4=SEVERE
SPECIAL: NO WATER 2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, MG/M3 OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
SULFURIC ACID	7664-93-9	>93	1	1	1 (DUPONT)	CORROSIVE
WATER	7732-18-5	BALANCE	NONE	NONE	NONE	NONE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: A = 529; B = 590
VAPOR PRESSURE, MM HG/20 DEG C: A, B = NIL
FREEZING POINT, DEG F: A = -20; B = 30
VAPOR DENSITY (AIR=1): N/A
SPECIFIC GRAVITY (WATER=1): A = 1.835; B = 1.84
WATER SOLUBILITY, %: COMPLETE
APPEARANCE AND ODOR: COLOR-LESS TO PALE YELLOW, OILY LIQUID. ODORLESS.
EVAPORATION RATE (BUTYL ACETATE=1): <1

A = 93% OR 66 DEG BE SULFURIC ACID; B = 99% SULFURIC ACID

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING

ER FOR 30 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY FLUSH SKIN WITH LOTS OF RUNNING WATER FOR 30 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET IMMEDIATE MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS ARE EXTREMELY CORROSIVE TO THE NOSE, THROAT, AND MUCOUS MEMBRANES. BRONCHITIS, PULMONARY EDEMA, AND CHEMICAL PNEUMONITIS MAY OCCUR. IRRITATION, COUGHING, CHEST PAIN, AND DIFFICULTY IN BREATHING MAY OCCUR WITH BRIEF EXPOSURE WHILE PROLONGED EXPOSURE MAY RESULT IN MORE SEVERE IRRITATION AND TISSUE DAMAGE. BREATHING HIGH CONCENTRATIONS MAY RESULT IN DEATH.

EYE CONTACT: VAPORS, LIQUID, AND MISTS ARE EXTREMELY CORROSIVE TO THE EYES. BRIEF CONTACT OF THE VAPORS WILL BE SEVERELY IRRITATING. BRIEF CONTACT OF THE LIQUID OR MISTS WILL SEVERELY DAMAGE THE EYES AND PROLONGED CONTACT MAY CAUSE PERMANENT EYE INJURY WHICH MAY BE FOLLOWED BY BLINDNESS.

SKIN CONTACT: VAPORS, MISTS, AND LIQUID ARE EXTREMELY CORROSIVE TO THE SKIN. VAPORS WILL SEVERELY IRRITATE THE SKIN AND LIQUID AND MISTS WILL SEVERELY BURN THE SKIN. PROLONGED LIQUID CONTACT WILL BURN OR DESTROY SURROUNDING TISSUE AND DEATH MAY ACCOMPANY BURNS WHICH EXTEND OVER LARGE PORTIONS OF THE BODY.

SWALLOWED: VAPORS, MISTS, AND LIQUID ARE EXTREMELY CORROSIVE TO THE MOUTH AND THROAT. SWALLOWING THE LIQUID BURNS THE TISSUES, CAUSES SEVERE ABDOMINAL PAIN, NAUSEA, VOMITING, AND COLLAPSE. SWALLOWING LARGE QUANTITIES CAN CAUSE DEATH.

CHRONIC EFFECTS OF EXPOSURE: MAY CAUSE EROSION OF THE TEETH, LESIONS ON THE SKIN, BRONCHIAL IRRITATION, COUGHING, AND PNEUMONIA.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: ACUTE AND CHRONIC RESPIRATORY DISEASES.

TOXICITY DATA

ORAL: RAT LD50 = 2,140 MG/KG

DERMAL: NO DATA FOUND

INHALATION: GUINEA PIG LC50 = 18 MG/M3

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: ALTHOUGH ONE LIMITED STUDY OF REFINERY WORKERS DID SUGGEST A POSSIBLE LINK BETWEEN SULFURIC ACID EXPOSURE AND LARYNGEAL CANCER, THE STUDY WAS LIMITED BECAUSE OF THE SMALL NUMBER OF WORKERS AND THE MIXED EXPOSURES TO SEVERAL OTHER MATERIALS INCLUDING DIETHYL SULFATE, AN IARC AND NTP CARCINOGEN. BASED ON THE OVERALL WEIGHT OF EVIDENCE FROM ALL ANIMAL TOXICITY AND HUMAN EPIDEMIOLOGICAL STUDIES, NO CAUSE-AND-EFFECT RELATIONSHIP BETWEEN CANCER AND SULFURIC ACID EXPOSURE HAS BEEN SHOWN. INDIVIDUALS WITH PREEXISTING DISEASE OF THE LUNGS MAY HAVE INCREASED SUSCEPTIBILITY TO THE TOXICITY OF EXCESSIVE EXPOSURES.

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAIN-

TAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THE VAPOR OR MIST CONCENTRATION AT THE POINT OF USE. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ACID GASES/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACESHIELD UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: ACID-RESISTANT SLICKER SUIT WITH RUBBER APRON, RUBBER BOOTS WITH PANTS OUTSIDE, AND RUBBER GLOVES WITH GAUNTLETS.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: NONE FLAMMABLE LIMITS IN AIR, %
METHOD USED: N/A LOWER: N/A UPPER: N/A
EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION SINCE FLAMMABLE HYDROGEN GAS WILL BE LIBERATED FROM CONTACT WITH SOME METALS. KEEP WATER OUT OF CONTAINERS.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE

MATERIALS TO AVOID: ALKALIS, OXIDIZING OR REDUCING MATERIALS, CYANIDES, SULFIDES, OR COMBUSTIBLE MATERIALS. REACTS WITH MANY METALS. CONCENTRATED ACID REACTS VIOLENTLY WITH WATER.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, AND OXIDES OF SULFUR.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR ACID-RESISTANT SLICKER SUIT AND COMPLETE PROTECTIVE EQUIPMENT INCLUDING RUBBER GLOVES, RUBBER BOOTS, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ACID GASES MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. REMOVE ALL SOURCES OF IGNITION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND CAREFULLY NEUTRALIZE WITH SODA ASH OR LIME. IF SODA ASH IS USED, PROVIDE ADEQUATE VENTILATION TO DISSIPATE THE CARBON DIOXIDE GAS. KEEP NON-NEUTRALIZED MATERIAL OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER CAREFULLY, AS NEEDED, TO RELIEVE PRESSURE. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

OTHER REGULATORY INFORMATION

DO NOT DETACH THIS SECTION FROM THE MSDS AND BE SURE TO INCLUDE THIS SECTION WHEN COPYING THE MSDS.

THIS PRODUCT IS A TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONSIDERED BY THE STATE OF CALIFORNIA'S SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH WARNINGS ARE NOW REQUIRED:

CHEMICAL	CAS NO.	%, WT
ARSENIC	7440-38-2	<0.4 PPM
CADMIUM	7440-43-9	<2.0 PPM
LEAD	7439-92-1	<0.01 PPM

NOTICE

VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

REVISION

08/89: QUANTIFIED OTHER REGULATORY INFORMATION.

**** E N D O F M S D S ****

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: M4784

MSDS DATE: 05-15-86

Diamond Shamrock Chemicals Company

PRODUCT NAME: **45% CAUSTIC POTASH-COMMERCIAL GRADE**

24 HOUR EMERGENCY PHONE: (214) 922-2700

I. PRODUCT IDENTIFICATION

3 HEALTH HAZARD, 0 FIRE HAZARD, & 1 REACTIVITY rating based on NIOSH "Identification System for Occupationally Hazardous Materials" (1974)

MANUFACTURER'S NAME AND ADDRESS: Diamond Shamrock Chemicals Company, Chlor-Alkali Division, 351 Phelps Court, P.O. Box 152300, Irving, Texas 75015-2300

CHEMICAL NAME: Potassium Hydroxide CAS NUMBER: 1310-58-3

SYNONYMS/COMMON NAMES: Potassium Hydroxide; KOH

CHEMICAL FORMULA: KOH

DOT PROPER SHIPPING NAME: Caustic Potash, Liquid

DOT HAZARD CLASS: Corrosive Material

DOT I.D. NUMBER: UN1814 HAZARDOUS SUBSTANCE: RQ1000

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	HAZARD DATA	CAS NUMBER	%
Potassium Hydroxide	PEL = None Established TLV = 2 mg/m^3 Ceiling Value	1310-58-3	45
Water	(See Section V)		55

The materials in this product are listed in the TSCA Inventory. Not listed as carcinogenic by IARC, NTP, OSHA, ACGIH

III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: 133°C VAPOR DENSITY (Air=1): NA

% VOLATILES BY VOL.: Not Volatile FREEZING POINT: -29°C (-20°F)

VAPOR PRESSURE: NA EVAPORATION RATE (BuAc=1): NA

SPECIFIC GRAVITY (H_2O=1): 1.45 @ 15.6°C

SOLUBILITY IN H_2O % BY WT: Completely Soluble

VISCOSITY: 3.7 Centipoises -(45%)

APPEARANCE AND ODOR: Clear with no odor

pH: 0.01 moles/liter has pH 12.0

CAS = Chemical Abstract Service Number
PEL = OSHA Permissible Exposure Limit
TLV = TLV®, ACGIH Threshold Limit Value, Current

N/A = No relevant information found or not available
NA = Not applicable

IV. FIRE AND EXPLOSION DATA

FLASH POINT: None AUTOIGNITION TEMPERATURE: Nonflammable
FLAMMABLE LIMITS IN AIR, % BY VOLUME- UPPER: Nonflammable
LOWER: Nonflammable
EXTINGUISHING MEDIA: This product is not combustible.
SPECIAL FIRE FIGHTING PROCEDURES: Avoid direct contact of this product with water.
UNUSUAL FIRE AND EXPLOSION HAZARD: None. See Reactivity (Section VI).

V. HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA:
Potassium Hydroxide: Acute Oral LD_{50} = 365 mg/kg (rat)

ROUTES OF EXPOSURE

INHALATION: Airborne concentrations of dust, mists, or spray may cause damage to the upper-respiratory tract and even to the lung tissue proper which could produce chemical pneumonia, depending upon severity of exposure.
SKIN CONTACT: This product is destructive to tissues contacted and produces severe burns.
SKIN ABSORPTION: See Skin Contact above.
EYE CONTACT: This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.
INGESTION: This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus and stomach.

EFFECTS OF OVEREXPOSURE

ACUTE: Corrosive to all body tissues with which it comes in contact.
CHRONIC: The chronic local effect may consist of multiple areas of superficial destruction of the skin or of primary irritant dermatitis. Similarly, inhalation of dust, spray, or mist may result in varying degrees of irritation or damage to the respiratory tract tissues and an increased susceptibility to respiratory illness.

EMERGENCY AND FIRST AID PROCEDURES

EYES: OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY THEN SEEK MEDICAL ATTENTION. IMMEDIATELY flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. Seek medical attention immediately.
SKIN: Wash contaminated areas with plenty of water for 15 minutes. Remove contaminated clothing and footwear and wash clothing before reuse. Discard footwear which cannot be decontaminated. Seek medical attention immediately.
INHALATION: Get person out of contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.
INGESTION: NEVER give anything by mouth to an unconscious person. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. If available, give several glasses of milk. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.
NOTES TO PHYSICIAN: None.

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions, the material is stable.
INCOMPATIBILITY: See Special Mixing and Handling (Section IX). Avoid direct contact with water. This product may be added slowly to water or acids with dilution and agitation to avoid a violent reaction. When handling this product, avoid contact with aluminum, tin, zinc, and alloys containing these metals. Do not mix with strong acids without dilution and agitation to prevent violent or explosive reaction. Avoid contact with leather or wool.
HAZARDOUS DECOMPOSITION PRODUCTS: None.
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

VII. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: If a material is spilled or released to the atmosphere, steps should be taken to contain liquids and prevent discharges to streams or sewer systems and control or stop the loss of volatile materials to the atmosphere. Spills or release should be reported, if required, to the appropriate local, state and federal regulatory agencies.

DISPOSAL OR STORAGE: Clean-up action should be carefully planned and executed. Shipment, storage, and/or disposal of waste materials are regulated and action to handle spilled or released materials must meet the applicable rules. If any question exists, the appropriate agencies should be contacted to assure proper action being taken.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS:
Use adequate local exhaust ventilation.
Note: Where carbon monoxide may be generated, special ventilation may be required.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiratory protection is not required under normal use. Use NIOSH/MSHA approved respirators where dust or mist may be generated.

EYE: Face shield and goggles or chemical goggles should be worn.

GLOVES: Rubber gloves should be worn. Gloves may be decontaminated by washing with mild soap and water.

OTHER CLOTHING AND EQUIPMENT: Protective clothing to minimize skin contact should be worn. Chemically-resistant safety shoes. Wash contaminated clothing with soap and water and dry before reuse. Safety showers and eyewash facilities should be provided in all areas in which this product is handled.

IX. SPECIAL PRECAUTIONS

SIGNAL WORD: DANGER!

STATEMENT OF HAZARDS:
CAUSES SEVERE BURNS TO SKIN AND EYES
CONTACT WITH EYES CAN CAUSE PERMANENT EYE DAMAGE
INHALATION OF DUST, MIST OR SPRAY CAN CAUSE SEVERE LUNG DAMAGE
CAN REACT VIOLENTLY WITH WATER, ACIDS AND OTHER SUBSTANCES.

PRECAUTIONARY STATEMENTS:
Do not get into eyes, on skin, on clothing.
Avoid breathing dust, mist, or spray.
Do not take internally.
Use with adequate ventilation and employ respiratory protection when exposure to dust, mist or spray is possible.
When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing.
Wash thoroughly after handling or contact - exposure can cause burns which are not immediately painful or visible.
Keep container closed.
Product can react violently with water, acids, and other substances - read Special Mixing and Handling Instructions below carefully before using.
Product is corrosive to tin, aluminum, zinc and alloys containing these metals, and will react violently with these metals in powder form.
Hazardous carbon monoxide gas can form upon contact with reducing sugars and food and beverage products in enclosed spaces and can cause death. Follow appropriate tank entry procedures (ANSI Z117.1-1977).

IX. SPECIAL PRECAUTIONS ...continued

FIRST AID:

IN CASE OF CONTACT:

FoFor eyes: Immediately flush with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of the entire eye surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. Seek medical attention immediately.

For skin: Immediately wash with plenty of water for 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse and discard footwear which cannot be decontaminated. Seek medical attention immediately.

IF INHALED: Remove person out of contaminated area to fresh air. If breathing has stopped, artificial respiration should be started. Oxygen may be administered, if available. Seek medical attention immediately.

IF SWALLOWED: Do not induce vomiting. Give large quantities of water. If available, give several glasses of milk. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

IN CASE OF SPILL OR LEAK: Leaks should be stopped. Spills, after containment, should be shoveled up or removed by vacuum truck (if liquid) to chemical waste area. Neutralize residue with dilute acid, flush spill area with water followed by liberal covering of sodium bicarbonate. Dispose of wash water and spill by-products according to federal, state, and local regulations.

SPECIAL MIXING AND HANDLING INSTRUCTIONS:

Considerable heat is generated when product is mixed with water. Therefore, when making solutions always carefully follow these steps:

ALWAYS wear ALL protective clothing described above. Never add water to product. ALWAYS add product - with constant stirring - slowly to surface of lukewarm (80-100°F) water, to assure product is being completely dissolved as it is added.

If product is added too rapidly, or without stirring, and becomes concentrated at bottom of mixing vessel, excessive heat may be generated, resulting in DANGEROUS boiling and spattering, and a possible IMMEDIATE AND VIOLENT ERUPTION of highly caustic solution.

Note: 50 pounds of product dissolved in 30 gallons of 90°F water will raise temperature of resulting solution to approximately 180°F. Never add more product than can be absorbed by solution while maintaining temperature below 200°F (@ sea level) to prevent boiling and spattering.

Product can react EXPLOSIVELY with acids, aldehydes, and many other organic chemicals - when mixing product with solutions containing such chemicals, follow all of above mixing instructions, and add product very gradually, while stirring constantly.

ALWAYS empty and clean containers of all residues before adding product, to avoid possible EXPLOSIVE reaction between product and unknown residue.

Returnable containers should be shipped in accordance with supplier's recommendations. Return shipments should comply with all federal, state, and DOT regulations. All residual caustic potash should be removed from containers prior to disposal.

More information on the hazards and handling of caustic potash appear in Diamond Shamrock Corporation's Material Safety Data Sheet and Caustic Potash Handbook CA-CP-5F.

DISPOSAL:

The materials resulting from clean-up operations may be hazardous wastes and, therefore, subject to specific regulations. Package, store, transport, and dispose of all clean-up materials and any contaminated equipment in accordance with all applicable federal, state, and local health environmental regulations. Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be performed by competent and properly permitted contractors. Ensure that all responsible federal, state, and local agencies receive proper notification of disposal.

DATE: 10/25/89 ACCT: 811802-01
INDEX: 05892280873 CAT NO: 14990B PO NBR: 9J4184-12M

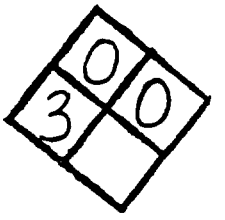
526-00064

MERCURY
MERCURY
MERCURY

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY CONTACTS:
GASTON L. PILLORI: (201) 796-7100
AFTER BUSINESS HOURS; HOLIDAYS:
(201) 796-7523
CHEMTREC ASSISTANCE: (800) 424-9300



THE INFORMATION BELOW IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

SUBSTANCE IDENTIFICATION

CAS-NUMBER 7439-97-6

SUBSTANCE: **MERCURY**

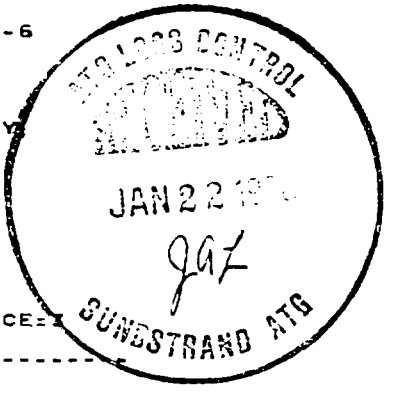
TRADE NAMES/SYNONYMS:
COLLOIDAL MERCURY; METALLIC MERCURY; NCI-C60399; QUICK SILVER; INORGANIC MERCURY; RCRA U151; NA 2809; HYDRARGYRUM; ELEMENTAL MERCURY; M-139; M-140; M-141; UN 2809; HG; ACC14020

CHEMICAL FAMILY:
METAL

MOLECULAR FORMULA: HG

MOLECULAR WEIGHT: 200.59

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=1
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0



COMPONENTS AND CONTAMINANTS

COMPONENT: MERCURY PERCENT: 100

THER CONTAMINANTS: NONE

EXPOSURE LIMITS:
MERCURY, ALL FORMS EXCEPT ALKYL (AS HG):
0.05 MG/M3 OSHA TWA (VAPOR); 0.1 MG/M3 OSHA CEILING (SKIN)
0.05 MG/M3 ACGIH TWA (VAPOR); 0.10 MG/M3 ACGIH TWA (ARYL & INORGANIC)-(SKIN)
0.05 MG/M3 NIOSH RECOMMENDED 10 HOUR TWA

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

MERCURY:
1 POUND CERCLA SECTION 103 REPORTABLE QUANTITY

PHYSICAL DATA

DESCRIPTION: ODORLESS, SILVERY LIQIUD WITH A METALIC LUSTER.

BOILING POINT: 674 F (357 C) MELTING POINT: -38 F (-39 C)

SPECIFIC GRAVITY: 13.5939 VAPOR PRESSURE: 0.002 MMHG @ 25 C

SOLUBILITY IN WATER: INSOLUBLE VAPOR DENSITY: 7.0

SOLVENT SOLUBILITY: SOLUBLE IN BOILING SULFURIC ACID, NITRIC ACID, LIPIDS; INSOLUBLE IN ALCOHOL, ETHER, HYDROCHLORIC ACID, HYDROGEN BROMIDE, HYDROGEN IODIDE

VISCOSITY: 1.55 CPS @ 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, HALON, WATER SPRAY OR STANDARD FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

OR LARGER FIRES, USE WATER SPRAY, FOG OR STANDARD FOAM (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4).

DATE: 10/25/89 ACCT: 811802-01
INDEX: 05892280873 CAT NO: 149908 PO NBR: 9J4184-12M

FIREFIGHTING:
MOVE CONTAINERS FROM FIRE AREA IF POSSIBLE. COOL CONTAINERS EXPOSED TO FLAMES WITH WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM STORAGE TANK ENDS (1987 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.4, GUIDE PAGE 60).

USE AGENTS SUITABLE FOR TYPE OF FIRE; USE WATER IN FLOODING AMOUNTS AS A FOG. AVOID BREATHING CORROSIVE AND POISONOUS VAPORS. KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49CFR172.101:
ORM-B

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49CFR172.101 AND SUBPART E:
NONE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49CFR173.860
EXCEPTIONS: NONE

TOXICITY

MERCURY:
TOXICITY DATA: 150 UG/M3/46 DAYS INHALATION-WOMAN TCLO; 44,300 UG/M3/8 HOURS INHALATION-MAN TCLO; 29 MG/M3/30 HOURS INHALATION-RABBIT LCLO; 129 MG/KG/5 HOURS CONTINUOUSLY SKIN-MAN TDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- MUCOUS MEMBRANES.
ACUTE TOXICITY LEVEL: INSUFFICIENT DATA.
TARGET EFFECTS: SENSITIZER- PULMONARY, DERMAL; NEUROTOXIN; NEPHROTOXIN; POISONING MAY ALSO AFFECT THE RESPIRATORY AND GASTROINTESTINAL SYSTEMS.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH CHRONIC RESPIRATORY DISEASE, NERVOUS SYSTEM DISORDERS AND KIDNEY DISEASE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
MERCURY:
IRRITANT/SENSITIZER/NEUROTOXIN/NEPHROTOXIN.
28 MG/M3 IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF HIGH LEVELS OF MERCURY VAPOR MAY CAUSE ALMOST IMMEDIATE DYSPNEA, COUGH, FEVER, NAUSEA, VOMITING, DIARRHEA, HEADACHE, STOMATITIS, SALIVATION, GINGIVITIS, A METALLIC TASTE, AND CARDIAC ABNORMALITIES. RESPIRATORY IRRITATION MAY OCCUR WITH CHEST PAIN AND TIGHTNESS. SYMPTOMS MAY RESOLVE OR MAY PROGRESS TO NECROTIZING BRONCHIOLITIS, PNEUMONITIS, PULMONARY EDEMA, PNEUMOTHORAX, INTERSTITIAL FIBROSIS, AND DEATH. ACIDOSIS AND RENAL DAMAGE MAY ALSO OCCUR.
ALLERGIC REACTIONS THAT MAY OCCUR IN PREVIOUSLY EXPOSED PERSONS INCLUDE DERMATITIS, ENCEPHALITIS, AND DEATH.
METAL FUME FEVER, AN INFLUENZA-LIKE ILLNESS, MAY OCCUR DUE TO THE INHALATION OF FRESHLY FORMED METAL OXIDE PARTICLES SIZED BELOW 1.5 MICRONS AND USUALLY BETWEEN 0.02-0.05 MICRONS. SYMPTOMS MAY BE DELAYED 4-12 HOURS AND BEGIN WITH A SUDDEN ONSET OF THIRST, AND A SWEET, METALLIC OR FOUL TASTE IN THE MOUTH. OTHER SYMPTOMS MAY INCLUDE UPPER RESPIRATORY TRACT IRRITATION ACCOMPANIED BY COUGHING AND A DRYNESS OF THE MUCOUS MEMBRANES, LASSITUDE AND A GENERALIZED FEELING OF MALAISE. FEVER, CHILLS, MUSCULAR PAIN, MILD TO SEVERE HEADACHE, NAUSEA, OCCASIONAL VOMITING, EXAGGERATED MENTAL ACTIVITY, PROFUSE SWEATING, EXCESSIVE URINATION, DIARRHEA AND PROSTRATION MAY ALSO OCCUR. TOLERANCE TO FUMES DEVELOPS RAPIDLY, BUT IS QUICKLY LOST. ALL SYMPTOMS USUALLY SUBSIDE WITHIN 24-36 HOURS.
CHRONIC EXPOSURE- INHALATION OF MERCURY VAPOR OVER A LONG PERIOD MAY CAUSE MERCURIALISM, WHICH IS CHARACTERIZED BY FINE TREMORS AND ERETHISM. TREMORS MAY AFFECT THE HANDS FIRST, BUT MAY ALSO BECOME EVIDENT IN THE FACE, ARMS, AND LEGS. ERETHISM MAY BE MANIFESTED BY ABNORMAL SHYNESS, BLUSHING, SELF-CONSCIOUSNESS, DEPRESSION OR DESPONDENCY, RESENTMENT OF CRITICISM, IRRITABILITY OR EXCITABILITY, HEADACHE, FATIGUE, AND INSOMNIA. IN SEVERE CASES, HALLUCINATIONS, LOSS OF MEMORY, AND MENTAL DETERIORATION MAY OCCUR. CONCENTRATIONS AS LOW AS 0.03 MG/M3 HAVE INDUCED PSYCHIATRIC SYMPTOMS IN HUMANS. RENAL INVOLVEMENT MAY BE INDICATED BY PROTEINURIA, ALBUMINURIA, ENZYMURIA, AND ANURIA. OTHER EFFECTS MAY INCLUDE SALIVATION, GINGIVITIS, STOMATITIS, LOOSENING OF THE TEETH, BLUE LINES ON THE GUMS, DIARRHEA, WEIGHT LOSS, ANOREXIA, SPEECH AND SENSORY DISORDERS, UNSTEADY GAIT, CHRONIC PNEUMONITIS AND MILD ANEMIA. REPEATED EXPOSURE TO MERCURY AND ITS COMPOUNDS MAY RESULT IN SENSITIZATION. INTRAUTERINE EXPOSURE MAY RESULT IN TREMORS AND INVOLUNTARY MOVEMENTS IN THE INFANTS. MERCURY IS EXCRETED IN BREAST MILK. PATERNAL REPRODUCTIVE EFFECTS AND EFFECTS ON FERTILITY HAVE BEEN REPORTED IN MALE RATS FOLLOWING REPEATED INHALATION EXPOSURES.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

DATE: 10/25/89 ACCT: 811802-01
INDEX: 05892280873 CAT NO: 149908 PO NBR: 9J4184-12M

MERCURY:
SENSITIZER/NEUROTOXIN/NEPHROTOXIN.
ACUTE EXPOSURE- DIRECT CONTACT WITH LIQUID MAY CAUSE IRRITATION AND REDNESS. SMALL AMOUNTS OF MERCURY MAY BE ABSORBED THROUGH INTACT SKIN. ALLERGIC REACTIONS THAT MAY OCCUR IN PREVIOUSLY EXPOSED PERSONS INCLUDE DERMATITIS, ENCEPHALITIS, AND DEATH. SUBCUTANEOUS INTRODUCTION, FROM HANDLING BROKEN THERMOMETERS, MAY RESULT IN LOCAL INFLAMMATION, GRANULOMATOUS SKIN REACTIONS, AND SLIGHT SIGNS OF MERCURY POISONING INCLUDING DIGESTIVE DISORDERS, METALLIC TASTE IN THE MOUTH, AND NEUROPSYCHIC DISORDERS.
CHRONIC EXPOSURE- PROLONGED OR REPEATED EXPOSURE MAY RESULT IN DERMAL SENSITIZATION AND SYSTEMIC EFFECTS AS DETAILED IN CHRONIC INHALATION EXPOSURE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
MERCURY:
ACUTE EXPOSURE- DIRECT CONTACT WITH LIQUID MAY CAUSE IRRITATION AND REDNESS. ANIMAL STUDIES INDICATE DIFFUSION AND ABSORPTION OF MERCURY INTO THE TISSUES OF THE EYE MAY OCCUR. NO CLINICAL SIGNS OF CONJUNCTIVITIS OR INFLAMMATION OCCURRED.
CHRONIC EXPOSURE- MERCURY EXPOSURE FROM INHALATION, INGESTION, OR SKIN CONTACT MAY BE INDICATED BY MERCURIALENTIS, DISCOLORATION OF THE CRYSTALLINE LENS, ON SLIT LAMP EXAMINATION OF THE EYE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
MERCURY:
NEUROTOXIN/NEPHROTOXIN.
ACUTE EXPOSURE- MAY CAUSE BURNING OF THE MOUTH AND THROAT, THIRST, NAUSEA AND VOMITING. METALLIC MERCURY IS NOT USUALLY ABSORBED SUFFICIENTLY FROM THE GASTROINTESTINAL TRACT TO INDUCE AN ACUTE TOXIC RESPONSE. RARELY, A LARGE SINGLE DOSE MAY RESULT IN SIGNS AND SYMPTOMS OF CHRONIC INHALATION IF SUFFICIENT AMOUNTS OF MERCURY ARE RETAINED IN THE BODY.
CHRONIC EXPOSURE- REPEATED INGESTION OF SMALL AMOUNTS OF MERCURY MAY RESULT IN THE ABSORPTION OF SUFFICIENT AMOUNTS TO PRODUCE TOXIC EFFECTS AS DETAILED IN CHRONIC INHALATION EXPOSURE.

FIRST AID- REMOVE BY GASTRIC LAVAGE OR EMESIS. MAINTAIN BLOOD PRESSURE AND AIRWAY. GIVE OXYGEN IF RESPIRATION IS DEPRESSED. DO NOT PERFORM GASTRIC LAVAGE OR EMESIS IF VICTIM IS UNCONSCIOUS. GET MEDICAL ATTENTION IMMEDIATELY (DREISBACH, HANDBOOK OF POISONING, 11TH ED.). ADMINISTRATION OF GASTRIC LAVAGE OR OXYGEN SHOULD BE PERFORMED BY QUALIFIED MEDICAL PERSONNEL.

ANTIDOTE:
THE FOLLOWING ANTIDOTE HAS BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL.

MERCURY POISONING:
GIVE DIMERCAPROL, 3 MG/KG (OR 0.3 ML/KG) EVERY 4 HOURS FOR THE FIRST 2 DAYS AND THEN 2 MG/KG EVERY 12 HOURS FOR A TOTAL OF 10 DAYS. DIMERCAPROL IS AVAILABLE AS A 10% SOLUTION IN OIL FOR INTRAMUSCULAR ADMINISTRATION. HEMODIALYSIS WILL SPEED THE REMOVAL OF THE MERCURY-DIMERCAPROL COMPLEX. PENICILLAMINE IS ALSO EFFECTIVE. GIVE UP TO 100 MG/KG/DAY (MAXIMUM 1 GRAM/DAY) DIVIDED INTO 4 DOSES FOR NO LONGER THAN 1 WEEK. IF A LONGER ADMINISTRATION PERIOD IS WARRANTED, DOSAGE SHOULD NOT EXCEED 40 MG/KG/DAY. GIVE THE DRUG ORALLY HALF AN HOUR BEFORE MEALS. A CHELATING AGENT SHOULD BE CONTINUED UNTIL THE URINE-MERCURY LEVEL FALLS BELOW 50 UG/24 HOURS (DREISBACH, HANDBOOK OF POISONING, 11TH ED.). ANTIDOTE SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
MERCURY:
ACETYLENE: FORMATION OF EXPLOSIVE COMPOUND.
ACETYLINIC COMPOUNDS: FORMATION OF EXPLOSIVE COMPOUND.
ALUMINUM: CORRODES.
AMINES: MAY FORM EXPLOSIVE COMPOUNDS.
AMMONIA + MOISTURE: FORMS EXPLOSIVE COMPOUND.
BORON DIIODPHOSPHIDE: IGNITES IN CONTACT WITH MERCURY VAPORS.
BROMINE: VIOLENT REACTION.
3-BROMOPROPYNE: EXPLOSION HAZARD.
CALCIUM: AMALGAM FORMATION @ 390 C IS VIOLENT.
CHLORINE: IGNITES @ 200-300 C.
CHLORINE DIOXIDE: EXPLODES.
COPPER (AND ALLOYS): MAY BE ATTACKED.

DATE: 10/25/89 ACCT: 811802-01
INDEX: 03892280873 CAT NO: 14990B PO NBR: 9J4184-12M

ETHYLENE OXIDE + TRACES OF ACETYLENE: MAY FORM EXPLOSIVE ACETYLIDES.
LITHIUM: AMALGAM FORMATION IS VIOLENTLY EXOTHERMIC AND MAY BE EXPLOSIVE.
METHYL AZIDE: PRODUCES SHOCK SENSITIVE MIXTURE.
METHYLSILANE + OXYGEN: PRODUCES SHOCK SENSITIVE MIXTURE.
NITRIC ACID + ALCOHOLS: FORMS FULMINATES CAPABLE OF DETONATION.
OXALIC ACID: FORMS SHOCK SENSITIVE COMPOUND.
OXIDANTS: VIOLENT REACTION.
PEROXYFORMIC ACID: EXPLOSIVE REACTION.
POTASSIUM: AMALGAM FORMATION IS VIGOROUSLY EXOTHERMIC AND MAY BE EXPLOSIVE.
RUBIDIUM: VIOLENT EXOTHERMIC REACTION.
SILVER PERCHLORATE + 3-HEXYNE: EXPLODES.
SILVER PERCHLORATE + 2-PENTYNE: EXPLODES.
SODIUM: AMALGAM FORMATION IS VIOLENTLY EXOTHERMIC.
SODIUM CARBIDE: VIGOROUS REACTION.
SULFURIC ACID (HOT): REACTS.
TETRACARBONYLNICKEL + OXYGEN: PRODUCES SHOCK SENSITIVE MIXTURE.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE HIGHLY TOXIC VAPORS OF MERCURY AND MERCURY OXIDES.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40CFR 262. EPA HAZARDOUS WASTE NUMBER U151.

****

CONDITIONS TO AVOID

MAY BURN BUT DOES NOT IGNITE READILY. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, OIL, ETC.).

****

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. A MERCURY SPILL KIT MAY ALSO BE USED FOR SMALL SPILLS IN THE WORKPLACE. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 1 POUND
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29CFR1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

MERCURY, ELEMENTAL:

0.5 MG/M3- ANY CHEMICAL CARTRIDGE RESPIRATOR WITH CARTRIDGES PROVIDING

DATE: 10/25/89 ACCT: 811802-01
INDEX: 05892280873 CAT NO: 14990B PO NBR: 9J4184-12M

PROTECTION AGAINST MERCURY.
ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

1.25 MG/M3- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.
ANY POWERED AIR-PURIFYING RESPIRATOR WITH A CANISTER PROVIDING PROTECTION AGAINST MERCURY.

2.5 MG/M3- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A TIGHT-FITTING FACEPIECE OPERATED IN A CONTINUOUS FLOW MODE.
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND CARTRIDGES PROVIDING PROTECTION AGAINST MERCURY.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED CANISTER PROVIDING PROTECTION AGAINST MERCURY.
ANY POWERED AIR-PURIFYING RESPIRATOR WITH A TIGHT-FITTING FACEPIECE AND A CANISTER PROVIDING PROTECTION AGAINST MERCURY.

28 MG/M3- ANY SUPPLIED-AIR RESPIRATOR WITH A HALF-MASK AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED CANISTER PROVIDING PROTECTION AGAINST MERCURY.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN PRESSURE DEMAND OR OTHER POSITIVE PRESSURE MODE.

SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE. CONTACT LENSES SHOULD NOT BE WORN.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC GROUP, INC.
CREATION DATE: 01/31/85 REVISION DATE: 08/03/89

-ADDITIONAL INFORMATION-
THE INFORMATION BELOW IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)
DYKEM STAINING COLORS

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I (Opaque Series)

Manufacturer's Name: DYKEM COMPANY	Emergency Telephone Number: (314)423-0100
Address (Number, Street, City, State, and ZIP Code): 8501 Delport Drive	Telephone Number for Information: (314)423-0100
St. Louis, Missouri 63114	Date Prepared: SEP - 1 1988
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
N-Butyl Acetate (CAS # 123-86-4)	150 PPM	150 PPM	None	30-40
Denatured Ethyl Alcohol (CAS # 64-17-5)	1000 PPM	1000 PPM	None	50-60
N-Butyl Alcohol (CAS # 71-36-3)	100 PPM	50 PPM	None	3-6
Nitrocellulose Base Pigment Dispersion (CAS # *N/A)	*N/A	*N/A	None	6-12
Cellulose, Nitrate (CAS # 9004-70-0)	*N/A	*N/A	None	70%
Isopropyl Alcohol (Rubbing Alcohol) (CAS # 67-63-0)	400 PPM	400 PPM	None	30%

3% - 6% containe

Section III — Physical/Chemical Characteristics

Boiling Point	160°F	Specific Gravity (H_2O = 1)	.86
Vapor Pressure (mm Hg.)	36	Melting Point	Liquid
Vapor Density (AIR = 1)	>1	Evaporation Rate (Butyl Acetate = 1)	>1

Solubility in Water: Appreciable

Appearance and Odor: Intense color, sweet solvent odor

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
53°F TCC		1.4	11.2

Extinguishing Media: Carbon Dioxide, Regular Foam, Dry Chemical

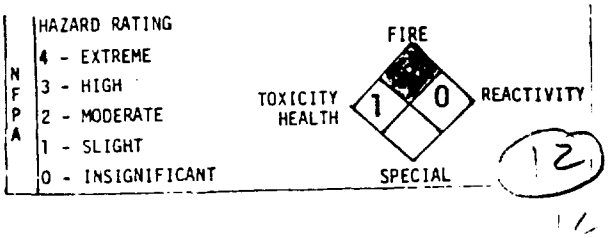
Special Fire Fighting Procedures: Wear self-contained breathing apparatus in enclosed areas. Water may be used to cool fire-exposed containers.

Unusual Fire and Explosion Hazards: Vapors are heavier than air and may travel along ground, or may be moved by ventilation and ignited by spark, flame and other ignition sources.

(Reproduce locally) *N/A = Not Applicable

OSHA 174, Sept. 1985

PROPER SHIPPING NAME: (D.O.T.) PAINT
HAZARD CLASS: (D.O.T.) FLAMMABLE LIQUID
I. D. NUMBER: UN-1263



Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	Avoid heat, sparks and open flame

Compatibility (*Materials to Avoid*): Strong oxidizing agents

Hazardous Decomposition or Byproducts: Carbon Monoxide or Carbon Dioxide

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	None

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Yes | Skin? Possible | Ingestion? Yes

Health Hazards (*Acute and Chronic*): Respiratory irritation. High concentrations of vapors may produce headache, dizziness, and nausea. Eye contact causes burning and irritation. Prolonged or repeated skin contact may lead to drying, irritation, and dermatitis.

Carcinogenicity: NTP? No | IARC Monographs? No | OSHA Regulated? No

Signs and Symptoms of Exposure: Dizziness, nausea, irritation of skin, respiratory irritation

Medical Conditions Generally Aggravated by Exposure: Eye contact causes burning and irritation. Repeated or prolonged skin contact may lead to drying, irritation and dermatitis.

Emergency and First Aid Procedures: Flush eye contact or prolonged skin contact with large amount of water. If exposed to excessive vapors, remove to fresh air. If swallowed, contact Local Poison Control Center or Physician immediately.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled: Wear personal protective equipment. (See Section VIII). Remove heat and ignition sources. Ventilate the area; clean up with inert absorbant.

Waste Disposal Method: Waste may be burned in an approved incinerator, or dispose of according to Local, State and Federal regulations.

Precautions to Be Taken in Handling and Storing: Store cool and dry away from heat, sparks, or open flame.

Other Precautions: Use with adequate ventilation. NOTE: This product does not contain any chemicals considered carcinogenic by IARC, NTP, or OSHA. Avoid prolonged skin contact.

Section VIII — Control Measures

Respiratory Protection (*Specify Type*): If TLV is exceeded, or for symptoms of over exposure, wear NIOSH approved organic vapor respirator.

Ventilation	Local Exhaust: Necessary under some handling or use conditions	Special: None	
	Mechanical (*General*): Acceptable under normal conditions	Other: None	

Protective Gloves: None needed under normal usage conditions

Eye Protection: None under normal use conditions. If splash potential exists wear chemical splash goggles or face shield.

Other Protective Clothing or Equipment: Wear neoprene or chemical resistant gloves and apron as needed to prevent repeated or prolonged skin contact.

Work/Hygienic Practices: Use with adequate ventilation.

repared by: DYKEM COMPANY
R. J. Belleville
(314)423-0100

000652 **FREON TMC 630#** Page: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

****

Product Name: FREON TMC 630#

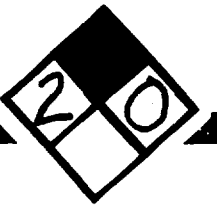
05 50 021 8723570-

Data Sheet No: 0000878-006
Prepared: 04/26/89
Supersedes: 12/22/88

SUNDSTRAND AVIATION (ROCKFORD)
PO BOX 7702
ROCKFORD IL 61125

PRODUCT: 3400327
INVOICE: 778160
INVOICE DATE: 12/21/89
TO: SUNDSTRAND AVIATION
4747 HARRISON
ROCKFORD IL 61125

ATTN: PLANT MGR./SAFETY DIR.



SECTION I - PRODUCT IDENTIFICATION

General or Generic ID: SOLVENT BLEND

DOT Hazard Classification: NOT APPLICABLE

SECTION III - COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION.
SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (by VOL)	PEL	TLV	Note
METHYLENE CHLORIDE CAS #: 75-09-2 Identified as a CARCINOGEN by IARC	54	500 PPM	50 PPM	(1)
1,1,2-TRICHLORO 1,2,2-TRIFLUOROETHANE CAS #: 76-13-1	46	1000 PPM	1000 PPM	(2)

Notes:

(1) THE OSHA ACCEPTABLE CEILING CONCENTRATION IS 1000 PPM. THE ACCEPTABLE MAXIMUM PEAK ABOVE THE ACCEPTANCE CEILING CONCENTRATION FOR AN 8-HOUR SHIFT IS 2000 PPM FOR A MAXIMUM DURATION OF 5 MINUTES IN ANY 2 HOURS. NIOSH RECOMMENDS A LIMIT OF 75 PPM, 8-HOUR TWA; 500 PPM 15 MINUTE CEILING.

THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.

(2) OSHA/ACGIH SHORT TERM EXPOSURE LIMIT (STEL) FOR 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE IS 1250 PPM.

THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.

SECTION II - PHYSICAL DATA

Boiling Point	for PRODUCT	97.20 Deg F (36.22 Deg C) @ 760.00 mm Hg
Vapor Pressure	for PRODUCT	500.00 mm Hg @ 77.00 Deg F (25.00 Deg C)
Specific Vapor Density	AIR = 1	4.9
Specific Gravity		1.420 @ 77.00 Deg F (25.00 Deg C)
Percent Volatiles		>95%
Evaporation Rate	(CARBON TETRA-CL = 1)	.30

SECTION IV - FIRE AND EXPLOSION INFORMATION

FLASH POINT NOT APPLICABLE

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: WATER FOG

HAZARDOUS DECOMPOSITION PRODUCTS: PHOSGENE, HYDROGEN FLUORIDE, CARBON DIOXIDE AND CARBON MONOXIDE, ETC., MAY FORM TOXIC MATERIALS:, HYDROGEN CHLORIDE

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.

SECTION V - HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT; SEE SECTION II AND SECTION IX.

EFFECTS OF ACUTE OVEREXPOSURE: FOR PRODUCT

EYES - CAN CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.
SKIN - PROLONGED OR REPEATED CONTACT CAN CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS.
BREATHING - EXCESSIVE INHALATION OF VAPORS CAN CAUSE NASAL AND RESPIRATORY IRRITATION, CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DIZZINESS, WEAKNESS, FATIGUE, NAUSEA, HEADACHE AND POSSIBLE UNCONSCIOUSNESS, AND EVEN DEATH.
SWALLOWING - CAN CAUSE GASTROINTESTINAL IRRITATION, NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

CONTINUED ON PAGE: 2

(14)

SECTION V—HEALTH HAZARD DATA (Continued)

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

IF SWALLOWED: DO NOT INDUCE VOMITING, KEEP PERSON WARM, QUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

DO NOT GIVE STIMULANTS. EPINEPHRINE OR EPHEDRINE MAY ADVERSELY AFFECT THE HEART WITH FATAL RESULTS.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION, SKIN CONTACT

EFFECTS OF CHRONIC OVEREXPOSURE: FOR PRODUCT

OVEREXPOSURE TO METHYLENE CHLORIDE CAN RAISE THE LEVEL OF CARBON MONOXIDE IN THE BLOOD CAUSING CARDIOVASCULAR STRESS.METHYLENE CHLORIDE IS LISTED AS A POTENTIAL CARCINOGEN (2B) BY IARC. RESULTS OF LABORATORY ANIMAL TESTS SHOW THAT METHYLENE CHLORIDE PRODUCED: BENIGN TUMORS IN RATS EXPOSED TO 500 PPM; CANCER IN RATS AND MICE EXPOSED TO 1500 PPM AND HIGHER, BUT NOT IN HAMSTERS. IT INCREASED THE RATE OF SPONTANEOUSLY OCCURRING MALIGNANT TUMORS IN THE B6C3F1 MOUSE. EPIDEMIOLOGY STUDIES FAILED TO SHOW A TUMORIGENIC RESPONSE IN PLANT WORKERS. METHYLENE CHLORIDE IS NOT BELIEVED TO POSE A MEASURABLE CANCER RISK TO MAN WHEN HANDLED AS RECOMMENDED.LABORATORY ANIMAL STUDIES TO EVALUATE POTENTIAL BIRTH DEFECTS AND EFFECTS ON REPRODUCTION SHOW: A LOW DEGREE OF MATERNAL AND EMBRYOTOXICITY AT 4500 PPM; NO TERATOLOGICAL EFFECTS AND NO EFFECTS ON REPRODUCTION AT CONCENTRATIONS OF 4500 AND 1225 PPM.

OVEREXPOSURE TO THIS MATERIAL (OR ITS COMPONENTS) HAS APPARENTLY BEEN FOUND TO CAUSE THE FOLLOWING EFFECTS IN LABORATORY ANIMALS:, LIVER ABNORMALITIES, LUNG DAMAGE

SECTION VI—REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS., OPEN FLAME, WELDING ARCS, RESISTANCE HEATERS, ETC., WHICH CAN RESULT IN THERMAL DECOMPOSITION RELEASING HYDROGEN CHLORIDE AND SMALL AMOUNTS OF PHOSGENE AND CHLORINE., REACTIVE METALS SUCH AS ALUMINUM AND MAGNESIUM, STRONG OXIDIZING AGENTS.

SECTION VII—SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON PAPER, VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.

LARGE SPILL: PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURED.

PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS.

WASTE DISPOSAL METHOD:

SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.

LARGE SPILL: DESTROY BY LIQUID INCINERATION WITH OFF-GAS SCRUBBER.

CONTAMINATED ABSORBENT MAY BE DEPOSITED IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII—PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: IF WORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE SECTION II), A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, POLYVINYL ALCOHOL, VITON

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX—SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATASHEET MUST BE OBSERVED.

AVOID PROLONGED CONTACT WITH PLASTIC AND RUBBER I.E. EQUIPMENT, PROTECTIVE CLOTHING, AND CONTAINERS.

CONTINUED ON PAGE: 3

SECTION IX—SPECIAL PRECAUTIONS OR OTHER COMMENTS (Continued)

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH THE COMPANY OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

 LAST PAGE--SEE ATTACHMENT PAGE ENCLOSED--LAST PAGE

MATERIAL SAFETY DATA SHEET

Per 29 CFR 1910.1200

DATE PREPARED 12/22/88

SECTION I.

BERLIN & COMPANY, INC. P.O. BOX 370-B, INDIANAPOLIS, IN 46206-0370 (317) 923-3211, 1-800-428-1149

WEST COAST FACTORY
P. O. Box 698, San Pablo, CA 94806

SOUTHEASTERN FACTORY
104 N. 13th St., Tampa, FL 33602-4237

24 HOUR EMERGENCY NUMBER (317) 923-3233
CHEMTREC 1-800-424-9300

IDENTITY (As Listed On Label) SOLVENT DEGREASER

HMIS HAZARD RATINGS: Health: 2
Flammability: 2
Reactivity: 0

SECTION II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components (Specific Chemical Identity: Common Name(s))	CAS #	OSHA PEL	ACGIH TLV-TWA	OTHER LIMITS RECOMMENDED	PERCENT
* Methylene Chloride, Dichloromethane	75-09-2	50 ~~500~~ PPM	50 ~~100~~ PPM	STEL 500 PPM	19
* Perchloroethylene, Tetrachloroethylene	127-18-4	25 ~~100~~ PPM	25 ~~50~~ PPM	STEL 200 PPM	30
Aliphatic Petroleum Distillates, Stoddard Solvent	8052-41-3	~~500~~ 500 PPM	~~500~~ 100 PPM	STEL 200 PPM	50-70

SECTION 313 SUPPLIER NOTIFICATION
The toxic chemical(s) listed above which are marked with an (*) are subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: 104-380 F
Vapor Pressure (mm Hg.): Dichloromethane 340 @ 68 F
Vapor Density (Air=1): Greater than 3.0
Solubility in Water: Negligible
Appearance and Odor: Colorless liquid, naphtha/chlorinated odor

Specific Gravity (H20 = 1): 1.01
Melting Point: Not applicable
Evaporation Rate (nBA = 1): 2.50

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): 185 F, Tag Closed Cup
Flammable Limits LEL Unknown UEL Unknown
Extinguishing Media: Carbon dioxide, foam, dry chemical
Special Fire Fighting Procedures: Self-contained respiratory equipment should be provided for firemen. Water fog may be used to cool closed containers.
Unusual Fire and Explosion Hazards: Never use welding or cutting torch on or near drum (even empty).

SECTION V - REACTIVITY DATA

Stability Unstable _____ Stable _I_ Conditions to Avoid: None
Incompatibility (Materials to Avoid): Alkali metals, open flames, electrical arcs.
Hazardous Decomposition or Byproducts: Carbon monoxide, carbon dioxide, hydrogen chloride, traces of phosgene upon thermal decomposition.
Hazardous Polymerization May Occur _____ May Not Occur _I_ Conditions to Avoid: None

20

SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry: Ingestion? Yes Skin? No Inhalation? Yes

Health Hazards (Acute and Chronic): ACUTE: Excessive inhalation or ingestion may product symptoms of central nervous system depression. Exposure to the eyes or skin may cause irritation. Low to moderately toxic by ingestion; however, if aspirated may cause chemical pneumonia.
CHRONIC: Prolonged or repeated inhalation may damage the liver and kidneys. Prolonged or repeated skin contact may cause dermatitis.

Carcinogenicity: A 1985 NTP inhalation study report states that there is "clear evidence of carcinogenicity" for dichloromethan and tetrachloroethylene in mice and rats. Experience in industry has shown no increased incidences of cancer o any type in the worker population.

Signs and Symptoms of Exposure: Skin contact may produce redness and pain. Eye contact may produce pain, redness, tearing. Overexposure by inhalation may result in headaches, dizziness, nausea, drowsiness. Prolonged overexposure may cause unconsciousness or even death. Ingestion may cause abdominal pain, vomiting. Absorption through the gastrointestinal tract may produce similar symptoms to excessi inhalation.

Medical Conditions Generally Aggravated by Exposure: Those with a history of heart disease, angina, or who are heavy drinkers or smokers should avoid exposure.

Emergency & First Aid Procedures:

Inhalation: Remove to fresh air. Administer oxygen if breathing is difficult. Get medical attention.

Eye Contact: Flush with large amounts of water for 15 minutes lifting upper & lower lids occasionally. Get medical attention.

Skin Contact: Wash with mild soap and water. Remove contaminated clothing and launder before reuse.

Ingestion: Give two glasses of water and induce vomiting immediately by sticking finger down throat. Call physician.

NOTE TO PHYSICIAN: Dichloromethane and tetrachloroethylene may increase "myocardial irritability." Do not administer sympathomimetic drugs unless absolutely necessary.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps To Be Taken In Case Material Is Released Or Spilled: Remove all sources of ignition. Ventilate the area well. Absorb on solid absorbent and shovel into containers. For large spills, recover with a vacuum truck. Contact an approved waste solvent disposal company.
Reportable Quantity (RQ) for Dichloromethane is 1000 lbs.
Reportable Quantity (RQ) for Tetrachloroethylene is 1 lb.

Waste Disposal Method: Dispose according to Federal, State and Local Laws and 40 CFR.

Precautions To Be Taken in Handling And Storing: Store containers in a cool, dry, well ventilated area.

VIII - CONTROL MEASURES

Respiratory Protection (Specify Type): If TLV(s) is exceeded, use a NIOSH/MSHA approved respirator. Self contained breathing apparatus for emergency use.

Ventilation: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Protective Gloves: Resistent gloves such as polyfluorinated polyethylene or viton.

Eye Protection: Chemical goggles. Contact lenses should not be used.

Other Protective Clothing or Equipment: As necessary to prevent skin contact. If splashing is probable, an eye wash and safety shower should be available.

Work/Hygienic Practices: Avoid breathing of vapors or mists. Fumes are heavier than air and will settle in confined low areas.

AVGANIC INDUSTRIES INC.
114 N. MAIN STREET
COTTAGE GROVE, WI 53527

MATERIAL SAFETY DATA SHEET

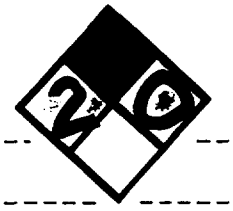
RC-0020 RC 1-1-1 TRICHLOROETHANE

DISTRIBUTED BY: AVGANIC INDUSTRIES INC.
114 NORTH MAIN STREET
COTTAGE GROVE,WI 53527
(608) 257-1414
( ) -

MSDS#:AV891RC0020XX

PREPARED BY:NAO/MWS
01/24/89

MANUFACTURED BY: AVGANIC INDUSTRIES, INC.



SECTION I - PRODUCT INFORMATION

TRADE NAME: RC 1,1,1-TRICHLOROETHANE
CHEMICAL NAME SYNONYMS: Methyl Chloroform

C.A.S. REGISTRY #: 71-55-6
CHEMICAL FAMILY: Chlorinated Hydrocarbon

FORMULA: CH3CCl3

DOT PROPER SHIPPING NAME: 1-1-1 TRICHLOROETHANE

D.O.T. HAZARD CLASS: ORM A

D.O.T. IDENTIFICATION #: UN2831 D.O.T. LABEL: CHLORINATED

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV LEVEL	PEL LEVEL
1,1,1-Trichloroethane	> 91%	350 ppm	350 ppm
* Stabilizers	< 7%	Not Estab.	Not Estab.
Methylene Chloride	0-2%	50 ppm	*
1,1,2-Trichloro-1,2,2-Trifluoroethane	0-2%	1000 ppm	1000 ppm
Trichloroethylene	0-2%	50 ppm	50 ppm
Perchloroethylene	0-2%	50 ppm	25 ppm
Acetone	0-2%	750 ppm	750 ppm
Methyl Ethyl Ketone	0-2%	200 ppm	200 ppm
Toluene	0-2%	100 ppm	100 ppm
Xylene	0-1%	100 ppm	100 ppm
Methyl Isobutyl Ketone	0-1%	50 ppm	50 ppm
Isopropyl Alcohol	< 0.5%	400 ppm	400 ppm

AVGANIC INDUSTRIES INC.
114 N. MAIN STREET
COTTAGE GROVE, WI 53527

MATERIAL SAFETY DATA SHEET

SECTION II - HAZARDOUS INGREDIENTS

Methanol	< 0.5%	200 ppm-skin	200 ppm-ski

NOTE : * Stabilizers commonly include: 1,2-Butylene Oxide, 1,4-Dioxane, s-Butanol, Ethyl Acetate, and Nitromethane. Other stabilizers which may also be present are: t-Amyl Alcohol and t-Butyl Alcohol. This product is a variable blend. The compounds listed have been identified by analysis of a typical blend of the product.

SECTION III - PHYSICAL DATA

BOILING POINT (DEG. F): 165.4
FREEZING POINT (DEG.F): - 49
VAPOR PRESSURE (MM HG): 135 @ 25 C
VAPOR DENSITY (AIR=1) : 4.6
SOLUBILITY IN WATER: Negligible

SPECIFIC GRAVITY: 1.3
PERCENT VOLATILE BY VOLUME%: 100 %
EVAPORATION RATE(Ether): 0.4

APPEARANCE AND ODOR: Clear, colorless liquid. Ether-like odor.

SECTION IV - FIRE EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): None.

FLAMMABLE LIMITS LEL: 7 UEL: 15

EXTINGUISHING MEDIA: Water spray. Dry Chemical. Carbon Dioxide.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area of unprotected personnel. Wear protective clothing including a NIOSH-Approved self-contained breathing apparatus. Cool fire-exposed containers with water spray. Run-off from fire control may cause pollution.

UNUSUAL FIRE EXPLOSION HAZARDS: Concentrated vapors can be ignited by high intensity heat source. Product may thermally decompose to produce Hydrogen Chloride vapors and possibly traces of Phosgene.

AVGANIC INDUSTRIES INC.
114 N. MAIN STREET
COTTAGE GROVE, WI 53527

MATERIAL SAFETY DATA SHEET

SECTION IV - FIRE EXPLOSION HAZARD DATA

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 350 ppm-TWA; 450 ppm-STEL (OSHA 29 CFR 1910.Z-1-A)
350 ppm-TWA; 450 ppm-STEL (ACGIH 1988-89)
* Exposure Limits listed are the lowest values for the major constituents of the product.

EFFECTS OF OVEREXPOSURE

EYE CONTACT: Short term liquid or vapor contact may result in slight irritation. Prolonged or repeated contact may be more irritating. Permanent eye damage may result.

SKIN CONTACT: May cause mild irritation to skin. Prolonged and repeated contact with skin can cause defatting and drying of the skin which may result in skin irritation and dermatitis.

INHALATION: High concentrations or prolonged exposure to lower concentrations may be slightly irritating to mucous membranes. Inhalation overexposure can lead to central nervous system depression producing effects such as headaches, nausea, dizziness and loss of consciousness. Extreme exposures may cause other central nervous system effects including death.

INGESTION: Liquid ingestion may result in vomiting; aspiration (breathing in of liquid into the lungs) must be avoided as liquid contact with the lungs can result in chemical pneumonitis and pulmonary edema/hemorrhage. Large amounts may be fatal.

OTHER: ROUTES OF EXPOSURE: Product can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute and chronic liver disease and rhythm disorders of the heart. TARGET ORGANS: Eyes. Skin. Cardiovascular System. Central Nervous System. Reports of animal test studies have shown that chronic overexposures

SECTION V - HEALTH HAZARD DATA

have caused liver toxic effects in experimental animals.

EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during this flushing with water. Call a physician immediately.

SKIN CONTACT: Flush area with water while removing contaminated clothing and shoes. Follow by washing with soap and water. Do not reuse clothing or shoes until cleaned. If irritation persists, get medical attention. Do not apply oils or ointments unless ordered by the physician.

INGESTION: If conscious, drink a quart of water. DO NOT induce vomiting. CALL A PHYSICIAN immediately. If unconscious or in convulsions, take immediately to a hospital or a physician. NEVER induce vomiting or give anything by mouth to an unconscious victim.

INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. CALL A PHYSICIAN. Do not give stimulants unless instructed to do so by a physician.

OTHER: ADDITIONAL NOTES TO PHYSICIAN: Chlorinated Solvent. Never administer adrenalin following overexposure. Increased sensitivity of the heart to adrenalin may be caused by overexposure to solvent.

SECTION VI - REACTIVITY DATA

STABILITY: X STABLE ___UNSTABLE
CONDITIONS TO AVOID: Avoid contact with heat, sparks, electric arcs, other hot surfaces, and open flames.

INCOMPATABILITY: Strong Oxidizing Agents. Alkalies. Alkali metals (strong reducing metals such as Aluminum, Sodium, Potassium, etc.).

SECTION VI - REACTIVITY DATA

Contact with aluminum parts in a pressurizable fluid system may cause violent reactions. Aluminum equipment should not be used for storage and/or transfer.

HAZARDOUS DECOMPOSITION PRODUCTS: May thermally decompose to form Carbon Monoxide, Carbon Dioxide, Hydrogen Chloride vapors, traces of Phosgene, and unidentifiable organic materials.

HAZARDOUS POLYMERIZATION: ___MAY OCCUR _X_WILL NOT OCCUR

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Eliminate all sources of ignition. Evacuate unprotected personnel from area. Maintain adequate ventilation. Use proper Safety Equipment. Contain spill, place into drums for proper disposal. Soak up residue with non-flammable absorbent material. Place in non-leaking containers for immediate disposal. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs.

WASTE DISPOSAL METHOD: Observe all Local, State, and Federal Regulations. Dispose of at approved Waste Treatment Facility. Reclaim (recycle) solvent. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks or other sources of ignition.

SECTION VIII - SPECIAL PROTECTION INFORMATION

CONSULT SAFETY EQUIPMENT DISTRIBUTOR

RESPIRATORY PROTECTION: If recommended Exposure Limits are exceeded wear: NIOSH-Approved organic respirator. NIOSH-Approved self-contained breathing apparatus. Do not exceed limits established by the respirator manufacturer.

VENTILATION: Maintain adequate ventilation. Do not use in closed

SECTION VIII - SPECIAL PROTECTION INFORMATION

or confined space. Keep levels below recommended Exposure Limits. To determine exposure levels, monitoring should be performed regularly. Avoid mist formation.

PROTECTIVE GLOVES: Polyvinyl Alcohol.

EYE PROTECTION: Chemical Safety Goggles. Face shield. Do not wear contact lenses.

OTHER PROTECTIVE EQUIPMENT: Eye-wash station. Safety shower. Rubber apron. Chemical safety shoes. Protective clothing.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
Store in cool, well-ventilated area away from all sources of ignition and out of direct sunlight. Ground all equipment to prevent accumulation of static charge. Keep containers tightly closed. Relieve pressure in drums weekly. Store away from incompatable materials. Do not store in unlabeled or mislabeled containers.

OTHER PRECAUTIONS: Avoid contact with skin and eyes. Do not swallow. Use with adequate ventilation. Avoid prolonged or repeated breathing of vapors. Wash thoroughly after handling. Avoid dust or mist formation. Do not eat, drink, or smoke in work area.

SECTION X - SUPPLEMENTAL HEALTH INFORMATION

CARCINOGEN CONTENT

% PPM	INGREDIENT	IARC	NTP	OSHA
0-2%	Trichloroethylene	N	N	N
0-2%	Methylene Chloride	P	P	N
0-2%	Perchloroethylene	P	P	N

SECTION X - SUPPLEMENTAL HEALTH INFORMATION

NOTE : N: Not listed as a known or potential carcinogen in source's list. Trichloroethylene has been extensively studied for chronic effects in animals. While there are studies in which tumors were induced in mice, there is no evidence that trichloroethylene poses a carcinogenic risk to humans. The International Agency for Research on Cancer (IARC) has concluded that there is sufficient evidence for the carcinogenicity of Methylene Chloride to experimental animals, and inadequate evidence for the carcinogenicity of Methylene Chloride to humans, resulting in a classification as a 2B animal carcinogen on the IARC list. The National Toxicology Program (NTP) has identified Methylene Chloride as an animal carcinogen. The American Conference of Governmental Hygienists (ACGIH) lists Methylene Chloride as an A2 - Suspected Human Carcinogen. Epidemiology studies of 751 humans chronically exposed to Methylene Chloride in the workplace of which 252 were exposed for a minimum of 20 years did not demonstrate any increase in deaths caused by cancer or cardiac problems. A second study of 2,227 workers confirmed these results. The International Agency for Research on Cancer (IARC) has concluded that that there is sufficient evidence for the carcinogenicity of Perchloroethylene to experimental animals, and inadequate evidence for the carcinogenicity of Perchloroethylene to humans, resulting in a classification as a 2B animal carcinogen on the IARC list. The National Toxicology Program (NTP) has identified Perchloroethylene as an animal carcinogen. Epidemiologic studies have been inconclusive in determining whether Perchloroethylene is associated with increased incidences of cancer in humans.

LD50 ORAL : Rat: 10300 mg/kg
LD50 SKIN : Rabbit: 500 mg/24H (Moderate irritation)
LC50 INHALATION : Rat LCLo: 1000 ppm

** ** ** ** ** ** ** ** ** ** **

SECTION X - SUPPLEMENTAL HEALTH INFORMATION

solely for your consideration, investigation, and verification.

516-00050

MATERIAL SAFETY DATA SHEET

DATE: 12/16/87

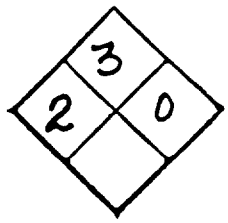
(S) 25517652

MANUFACTURER'S NAME:
GLYPTAL, INC.

EMERGENCY TELEPHONE NUMBER
(617) 884-6918

STREET ADDRESS:
305 Eastern Avenue

CITY, STATE, and ZIP CODE:
Chelsea, MA 02150



PURCHASING

APR 26 1988

RECEIVED

SECTION I-PRODUCT IDENTIFICATION

MANUFACTURER'S CODE IDENTIFICATION: 1201 Red Enamel

PRODUCT CLASS: Alkyd

TRADE NAME: GLYPTAL

INSULATING ~~ENAMEL~~ LAQVER

HAZARD INDEX
0- MINIMAL Hazard
1- SLIGHT Hazard
2- MODERATE Hazard
3- SERIOUS Hazard
4- SEVERE Hazard

HEALTH	2
FLAMMABILITY	3
REACTIVITY	0

SECTION II-HAZARDOUS INGREDIENTS

INGREDIENT	CAS #	PERCENT	EXPOSURE LIMITS TLV	PEL	VAP PRESS
Xylene	1330-20-7	34.4	100	435	9
VM&P Naphtha	84742-89-8	5.6	300	1300	4
Talc	14807-96-6	17.0	---	2*	-

* For pigment dust

1150A/65

(21)

516-00050

SECTION III - PHYSICAL DATA

BOILING RANGE: 242-287 ^{0}F VAPOR DENSITY: x Heavier __ Lighter Than Air

EVAPORATION RATE: __ Faster _x Slower Than Ether

PERCENT VOLITELE BY VOLUME: 56.1 WEIGHT PER GALLON: 9.95

PURCHASING

APR 26 1988

RECEIVED

SECTION IV - FIRE and EXPLOSION HAZARD DATA

DOT CATEGORY: Paint, Flammable Liquid
UN 1263 Red Label
LEL: 1.0

FLASH POINT: 72^{0}F

EXTINGUISHING MEDIA:

_x FOAM	__ "ALCOHOL" FOAM	_x CARBON DIOXIDE	_x DRY CHEMICA
_x WATER FOG	__ OTHER		

UNUSUAL FIRE and EXPOLSION HAZARDS: Explosion hazard in containers due to pressure build-up due to heat. Use water to keep containers cool.

SPECIAL FIREFIGHTING PROCEDURES: Self-contained breathing apparatus wi positive pressure mode should be worn Water should be used to keep fire exposed containers cool to reduce pressure.

1150A/5

516-00050

PURCHASING

APR 26 1988

RECEIVED

SECTION V-HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: SEE Section II

ACUTE: Skin and eye contact: Primary irritation.

CHRONIC: Xylene contained in this material has been found to [illegible] effects in laboratory animals: anemia, liver abnormalities, liver & eye dama

OVEREXPOSURE: Contains xylene. Can lead to cental nervous system depressio producing such effects as headaches, dizziness, nausea and loss of conscious

INGESTION: Liquid ingesiton may result in vomitting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities in the lungs may result in chemical pneumonitis and pulmonary edema/hemorrhage.

INHALATION: This product or one of its ingredients present 0.1% or more is listed as a carginogen by NTP, IARC Or OSHA __YES _X NO

Products/Ingredients:

Ethylbenzene: NTP and IARC have reported that ethylbenzene is not carcinogenic in test animals through injestion and inhalation, and in humans through inhalation.

EYE CONTACT: Short-term liquid or vapor contact may result in slight eye irritation. Prolonged or repeated contact may be more irritating.

SKIN CONTACT: Prolonged or repeated liquid contact can cause defatting and drying of skin which may result in skin irritation and dermititis.

EMERGENCY AND FIRST AID PROCEDURES:

INGESTION: If vomitting occure spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Consult Physician IMMEDIATELY.

INHALATION: Remove from exposure. Unconscious but breathing: Administeroxygen. Not Breathing: Artifical Resusitation.

EYE CONTACT: Flush with copious amounts of water. SEE PHYSICIAN.

SKIN CONTACT: Wash thoroughly with soap and water.. Use hand lotion. Remove contaminated clothing and shoes and do not reuse until cleaned.

SECTION VI-REACITVITY DATA

STABILITY: ___ Unstable _X_ Stable

CONDITIONS TO AVOID: Excessive heat, sparks, and open flames.

INCOMPATABILITY (Materials to avoid): Strong oxidizers, acids, metallic halides (salts), such as ferric and aluminum chlorides.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide may be formed by incomplete combusiton and vaporizing monomers.

HAZARDOUS POLYMERIZATION: _X_ May Occur ___ Will Not Occur

516-00050

SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Use an absorbent material such as Vermiculite to remove spilled material. Provide adequate ventilation. Avoid excessive heat, sparks, and open flames.

WASTE DISPOSAL METHOD: Solvents may be distilled off or removed. Dispose of waste paint and residuesas ignitable material D001, following all Federal, State, and local regulations.

PURCHASING

APR 26 1988

RECEIVED

SECTION VIII-SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: In confined areas use: Approved self-contained respirators.

VENTILATION: Keep vapors below LEL (Section IV) and TLV (Section II). Solvent vapors should be removed by dilution ventilation from lower levels. Eliminate all ignition sources (open motors, switches, etc.)

PROTECTIVE GLOVES: Impervious Gloves

EYE PROTECTION: Chemical Goggles

OTHER PROTECTIVE EQUIPMENT: As required to avoid skin contact.

SECTION IX-SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a cool, well-ventilated area. Avoid excessive heat, sparks, and open flames. Ground containers and transfer vessels. Keep free fall of liquid to a few inches to avoid build-up of static electricity.

DOL STORAGE CATEGORY:

OTHER PRECAUTIONS: Do not take internally. Avoid prolonged contact with skin.

FREON

REVISION DT: 07/11/86

ORDER NO: 691W38356

SUNDSTRAND AVIATION
ENVIRONMENTAL ANALYST

P.O.BOX 7002
ROCKFORD IL 61125

MCKESSON CHEMICAL COMPANY ONE POST STREET SAN FRANCISCO, CA 94104

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC
(800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL MCKESSON CHEMICAL COMPANY SERVICE CENTER

PRODUCT IDENTIFICATION

PRODUCT NAME: FREON (R) TMC
CAS NO.: AZEOTROPE
COMMON NAMES/SYNONYMS: AZEOTROPE OF FREON (R) TF AND METHYLENE CHLORIDE
MCKESSON CODE: T1115

FORMULA: C2 CL3 F3 / C H2 CL2
DATE ISSUED: 06/86
SUPERCEDES: 02/86
HAZARD RATING (NFPA 704)
HEALTH: 2
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
FREON (R) TF (TRICHLOROTRI-FLUOROETHANE)	76-13-1	50	1000	1000	NONE	OSHA/ACGIH LIST
METHYLENE CHLORIDE	76-09-2	50	500	100	NONE	OSHA/ACGIH LIST

FREON REVISION OF: 07/11/86

(R) TRADEMARK OF DUPONT FOR ITS FLUOROCARBON COMPOUNDS

PHYSICAL PROPERTIES

BOILING POINT, DEG F: 97.7
MELTING POINT, DEG F: -126
SPECIFIC GRAVITY (WATER=1): 1.42
APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID; MILD ODOR
VAPOR PRESSURE, MM HG/25 DEG C: 500
VAPOR DENSITY (AIR=1): 2.7
WATER SOLUBILITY, %: NIL
EVAPORATION RATE (BUTYL ACETATE=1): >1

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER OR MILK. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

NOTE TO PHYSICIANS: BECAUSE OF POSSIBLE INCREASED RISK OF ELICITING CARDIAC DYSRYTHMIAS, CATECHOLAMINE DRUGS, SUCH AS EPINEPHRINE, SHOULD BE CONSIDERED ONLY AS A LAST RESORT IN LIFE THREATENING EMERGENCIES.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: PROLONGED OR REPEATED EXPOSURE OR BREATHING VERY HIGH CONCENTRATIONS MAY CAUSE LIGHT-HEADEDNESS, GIDDINESS, SHORTNESS OF BREATH AND MAY LEAD TO NARCOSIS, CARDIAC IRREGULARITIES, UNCONSCIOUSNESS, OR DEATH. VAPORS ARE HEAVIER THAN AIR AND CAN CAUSE SUFFOCATION BY REDUCING OXYGEN AVAILABLE FOR BREATHING. IN SCREENING STUDIES WITH

EXPERIMENTAL ANIMALS, EXPOSURE TO FREON (R) TF AT APPROXIMATELY 5000 PPM (V/V) AND ABOVE, FOLLOWED BY A LARGE INTRAVENOUS EPINEPHRINE CHALLENGE, HAS INDUCED SERIOUS CARDIAC IRREGULARITIES.

EYE CONTACT: LIQUID AND MIST MAY IRRITATE THE EYES.

SKIN CONTACT: NO IRRITATION IS LIKELY AFTER BRIEF CONTACT BUT MAY BE IRRITATING AFTER PROLONGED CONTACT.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA AND VOMITING.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: CARDIOVASCULAR DISEASE.

TOXICITY DATA

NO DATA FOUND FOR FREON (R) TMC. HOWEVER, FOR FREON (R) TF, ITS MAJOR COMPONENT:

ORAL: RAT LD50 = 43 G/KG

DERMAL: RABBIT 500 MG ON OPEN SKIN CAUSED MILD IRRITATION

INHALATION: RAT LC50 = 52,000 PPM/4HR

FOR METHYLENE CHLORIDE, ANOTHER MAJOR COMPONENT OF THIS PRODUCT:

ORAL: RAT LD50 = 2524 MG/KG

DERMAL: RABBIT LD50 > 4640 MG/KG

INHALATION: HUMAN TCLO = 500 PPM/8HR
MOUSE LC50 = 14,400 PPM/7HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: A "HAZARD ALERT" ISSUED BY THE STATE OF CALIFORNIA DEPART-

MENT OF HEALTH SERVICES REPORTS RECENT STUDIES SHOW THAT METHYLENE CHLORIDE, A COMPONENT OF THIS PRODUCT, CAUSES CANCER IN LABORATORY ANIMALS. THE IARC CARCINOGENIC DETERMINATION FOR METHYLENE CHLORIDE IS ANIMAL INDEFINITE. AN EPIDEMIOLOGICAL STUDY OF MALE HUMANS CONTINUALLY EXPOSED TO ESTIMATED TWA CONCENTRATIONS OF 30-125 PPM FOR UP TO 30 YEARS INDICATED NO INCREASE IN MORTALITY COMPARED TO THE GENERAL HUMAN MALE POPULATION.

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE LOWEST PEL.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR IF USE CONDITIONS GENERATE VAPORS OR MISTS.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: NONE FLAMMABLE LIMITS IN AIR, %
METHOD USED: N/A LOWER: N/A UPPER: N/A

EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION SINCE VAPORS DECOMPOSE TO HAZARDOUS PRODUCTS AT HIGH TEMPERATURES.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: OPEN FLAMES, WELDING ARCS, OR OTHER HIGH TEMPERATURE SOURCES WHICH MAY INDUCE THERMAL DECOMPOSITION.

MATERIALS TO AVOID: ALKALIS, OXIDIZING MATERIALS, WATER, AND MOIST AIR. ALSO ALKALI OR ALKALINE EARTH METALS, POWDERED ALUMINUM OR ZINC.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN CHLORIDE, CHLORINE, PHOSGENE, AND HYDROGEN FLUORIDE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL AND PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF CONTAMINATION. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT

USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. DO NOT HEAT CLOSED CONTAINER ABOVE 125 DEG F.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: VAPORS OF THIS PRODUCT ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW PLACES, SUCH AS PITS OR DEGREASERS, OR OTHER POORLY VENTILATED AREAS. DO NOT ENTER PLACES WHERE VAPORS ARE SUSPECTED UNLESS SPECIAL RESPIRATORY PROTECTION IS WORN AND AN OBSERVER IS PRESENT.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, MCKESSON CHEMICAL COMPANY
DURING BUSINESS HOURS, PACIFIC TIME (415)983-9214

NOTICE

ALL INFORMATION, RECOMMENDATIONS, AND SUGGESTIONS APPEARING HEREIN CONCERNING THIS PRODUCT ARE BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES; HOWEVER, MCKESSON CHEMICAL COMPANY ("MCC") MAKES NO WARRANTY, REPRESENTATION OR GUARANTY AS TO THE ACCURACY, SUFFICIENCY OR COMPLETENESS OF THE MATERIAL SET FORTH HEREIN. IT IS THE USER'S RESPONSIBILITY TO DETERMINE THE SAFETY, TOXICITY AND SUITABILITY OF HIS OWN USE, HANDLING AND DISPOSAL OF THE PRODUCT. ADDITIONAL PRODUCT LITERATURE MAY BE AVAILABLE UPON REQUEST. SINCE ACTUAL USE BY OTHERS IS BEYOND OUR CONTROL, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE BY MCC AS TO THE EFFECTS OF SUCH USE, THE RESULTS TO BE OBTAINED OR THE SAFETY AND TOXICITY OF THE PRODUCT, NOR DOES MCC ASSUME ANY LIABILITY ARISING OUT OF USE BY OTHERS OF THE PRODUCT REFERRED TO HEREIN. THE DATA IN THIS MSDS RELATE ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DO NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS.

REVISION 00

06/86: REVISED NFPA SIGNAL. REPORTED AS NO. OF COMPONENTS AND CORRECT-

FREON REVISION DATE: 07/11/86

ED VAPOR PRESSURE. ADDED NOTE TO PHYSICIAN AND EXPANDED INHALATION HAZARDS. REVISED AGGRAVATED MEDICAL CONDITIONS, REPORTED TOXICITY DATA OF COMPONENTS AND ADDED METHYLENE CHLORIDE HAZARDS. REVISED PERSONAL PROTECTION AND FIRE/EXPLOSION INFORMATION. EXPANDED SPILL/LEAK PROCEDURES AND HANDLING ADVICE.

********** END OF MSDS **********

Rock Valley Oil & Chemical Co.

[redacted]

MATERIAL SAFETY DATA SHEET

SECTION 1

MANUFACTURER'S NAME	EMERGENCY TELEPHONE
ADDRESS (Number, Street, City, State and ZIP Code)	
CHEMICAL NAME AND SYNONYMS: MIL-F-7024C, Type 2, Calibration Fluid	TRADE NAME AND SYNONYMS: Mineral Spirits
CHEMICAL FAMILY: Hydrocarbon solvent	FORMULA: N/A

SECTION 2 PHYSICAL DATA

BOILING POINT (°F.)	320	SPECIFIC GRAVITY (H_2O = 1)	.77
VAPOR PRESSURE (mmHg.) @ 68°F	2	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR = 1)	4.9	EVAPORATION RATE (_____ = 1)	0.06
SOLUBILITY IN WATER: Negligible			

APPEARANCE AND ODOR: Clear, colorless liquid, characteristic petroleum odor.

SECTION 3 FIRE and EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
108°F, TCC		1.0	6.0

EXTINGUISHING MEDIA: Dry chemical-CO_2-Foam-Water Spray

SPECIAL FIRE FIGHTING PROCEDURES: Self-contained respiratory protection should be provided for firemen.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Heavy vapor can travel to source of ignition and flash back.

SECTION 4 HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 500 PPM

EFFECTS OF OVEREXPOSURE: Dizziness, nausea, headache. Severe eye irritation, drying of skin.

EMERGENCY AND FIRST AID PROCEDURES: EYES: Flush with water, get medical attention. SKIN: Wash with mild soap & water & apply skin cream. INHALATION: Remove to fresh air & call physician apply artificial respiration if necessary. INGESTION: Do NOT induce vomiting; get medical attention!

SECTION 5 REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Heat, sparks, open flame
	STABLE	XX	

INCOMPATIBILITY (Materials to avoid): Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may yield CO, CO_2, various hydrocarbons

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	XX	

SECTION 6 SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate all sources of ignition. Remove with absorbent material or flush with water into a safe container.

WASTE DISPOSAL METHOD

Incinerate in a safe manner or dispose in accordance with local, state and federal regulations.

SECTION 7 SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Self-contained breathing apparatus when atmosphere exceeds TLV limits.

VENTILATION	LOCAL EXHAUST	SPECIAL
	YES-Sufficient to maintain TLV	Explosion Proof
	MECHANICAL (General)	OTHER
	YES-Sufficient to maintail TLV	

PROTECTIVE GLOVES: Neoprene

EYE PROTECTION: Chemical Goggles

OTHER PROTECTIVE EQUIPMENT

Eye bath & safety shower. Impervious clothing and boots.

SECTION 8 SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

STORAGE TEMP _____ °F MAX _____ °F MIN

SHELF LIFE

_____ MONTHS _____ INDOOR _____ OUTDOOR

SHIPPING CLASSIFICATION

CONTAINERS: METAL _____ GLASS _____ PLASTIC _____ OTHER TYPE _____

OTHER PRECAUTIONS

Do not store or use near open flame or extreme heat. Use adequate ventilation. Avoid prolonged or repeated contact with the skin.

IMPORTANT:

THE DATA CONTAINED IN THIS FORM IS BASED ON THE BEST INFORMATION PRESENTLY AVAILABLE.

PREPARED BY _____ TITLE _____

MATERIAL SAFETY
DATA SHEET

JET FUEL JP-4

MANUFACTURER/SUPPLIER:
Amoco Oil Company
200 East Randolph Drive
Chicago, Illinois 60601

EMERGENCY HEALTH INFORMATION: (800) 447-8735
EMERGENCY SPILL INFORMATION: (800) 424-9300
OTHER PRODUCT SAFETY INFORMATION: (312) 856-3907

IMPORTANT COMPONENTS: Petroleum naphtha.
Petroleum distillate.
Benzene (CAS 71-43-2) ACGIH TLV 10 ppm,
OSHA PEL 1 ppm (8-hr. TWA), 5 ppm STEL (15 mins.).

WARNING STATEMENT: Warning! Flammable. Harmful or fatal if swallowed and/or aspirated into lungs. Vapor harmful - High concentrations can cause headaches, dizziness, drowsiness and nausea. Can produce skin irritation upon prolonged or repeated contact.

HMIS/NFPA CODES:(HEALTH;1)(FLAMMABILITY;3)(REACTIVITY;0)

APPEARANCE AND ODOR: Colorless liquid; fuel oil odor.

HEALTH HAZARD INFORMATION

EYE

EFFECT: High concentrations of vapor/mist may cause eye discomfort.

FIRST AID: Flush eyes with plenty of water. Get medical attention if irritation persists.

PROTECTION: None required; however, use of eye protection is good industrial practice.

SKIN

EFFECT: Can cause skin irritation on prolonged or repeated contact. See Toxicology Section.

FIRST AID: Wash exposed skin with soap and water. Remove contaminated clothing, including shoes, and thoroughly clean and dry before reuse. Get medical attention if irritation develops.

PROTECTION: Wear protective clothing and gloves if prolonged or repeated contact is likely. Avoid prolonged or repeated skin contact.

INHALATION

EFFECT: Vapor harmful. High vapor concentrations can cause headaches, dizziness, drowsiness and nausea. See Toxicology Section.

FIRST AID: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get medical attention.

PROTECTION: Avoid breathing vapor and/or mist. Use with adequate ventilation. If ventilation is inadequate, use NIOSH/MSHA certified respirator which will protect against organic vapor/mist.

HEALTH HAZARD INFORMATION - CONTINUED

INGESTION

EFFECT: Low viscosity product. Harmful or fatal if aspirated into lungs.

FIRST AID: If swallowed, do NOT induce vomiting. Get immediate medical attention.

FIRE AND EXPLOSION INFORMATION

FLASHPOINT: -10°F TO 30°F, (CC) Range

FLAMMABLE LIMITS: UPPER: 8% LOWER: 1.3%

AUTOIGNITION TEMPERATURE: 468°F

EXTINGUISHING MEDIA: Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, halogenated agents, foam, steam) and water fog.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapor may explode if ignited in enclosed area.

PRECAUTIONS: Keep away from ignition sources (e.g., heat, sparks and open flames). Keep container closed. Use with adequate ventilation.

REACTIVITY INFORMATION

DANGEROUS REACTIONS: None identified.

HAZARDOUS DECOMPOSITION: Burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

STABILITY: Stable.

CHEMICAL AND PHYSICAL PROPERTIES

BOILING POINT: 250°F TO 549°F, Range

SOLUBILITY IN WATER: Negligible, below 0.1%.

SPECIFIC GRAVITY (WATER = 1): 0.75 TO 0.8

VAPOR PRESSURE: 2-3 psi @ 100°F

STORAGE AND ENVIRONMENTAL PROTECTION

STORAGE REQUIREMENTS: Store in flammable liquids storage area. Store away from heat, ignition sources, and open flame in accordance with applicable federal, state, or local regulations.

SPILLS AND LEAKS: Remove or shut off all sources of ignition. Increase ventilation, if possible. Use water spray to disperse vapors.

WASTE DISPOSAL: Disposal must be in accordance with applicable federal, state, or local regulations. Enclosed-controlled incineration is recommended unless directed otherwise by applicable ordinances.

SPECIAL PRECAUTIONS: Avoid strong oxidizers.

TOXICOLOGICAL INFORMATION

Skin: From skin-painting studies of petroleum distillates of similar composition and distillate range, it has been shown that these types of materials often possess weak carcinogenic activity in laboratory animals. Therefore, there may be a potential risk of skin cancer from prolonged or repeated skin contact with this product in the absence of good personal hygiene.

Occasional skin contact with this product is not expected to have serious effects, but good personal hygiene should be practiced and repeated skin contact avoided. This product can also be expected to produce skin irritation upon prolonged or repeated skin contact. Personal hygiene measures taken to prevent skin irritation are expected to be adequate to prevent risk of skin cancer.

Excessive exposure to vapors may produce headaches, dizziness, nausea, drowsiness, irritation of eyes, nose and throat and central nervous system depression.

Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product.

Jet Fuel JP-4 is a complex mixture of hydrocarbons and contains benzene (up to approximately 2%). Chronic exposure to high levels of benzene has been shown to cause cancer (leukemia) in humans and other adverse blood effects (anemia). Benzene is considered a human carcinogen by IARC, NTP and OSHA.

Materials of this type have been shown to produce kidney damage in male rats following prolonged inhalation exposures. Following extensive research, this effect appears to be unique to the male rat and is considered to be of little or no relevance in terms of human health risk.

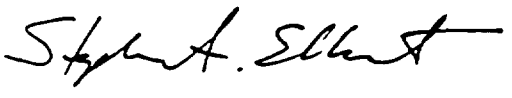
REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: Fuel, Aviation, Turbine Engine, Flammable Liquid, UN1863.

OSHA HAZARD COMMUNICATION STANDARD: Flammable liquid. Irritant. Contains a carcinogenic component.

TSCA STATUS: All of the components of this product are listed on the TSCA Inventory.

ISSUE INFORMATION

BY: 

Stephen A. Elbert
Mgr., Product Safety & Toxicology

ISSUED: April 28, 1988
SUPERSEDES: April 15, 1985

This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our company. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either express or implied.

HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE, WI 53226

MATERIAL SAFETY DATA SHEET

AA-1002 **STODDARD SOLVENT**

DISTRIBUTED BY: HYDRITE CHEMICAL CO.
2655 NORTH MAYFAIR ROAD
MILWAUKEE,WI 53226
(414) 257-2300
(414) 277-1311

MSDS#:HY861AA1002XX

PREPARED BY:LMT/JRS
01/30/86

MANUFACTURED BY: Shell

SECTION I - PRODUCT INFORMATION

TRADE NAME: Stoddard Solvent
CHEMICAL NAME SYNONYMS: Shell Sol 340

C.A.S. REGISTRY #: 64742-88-7
CHEMICAL FAMILY: Hydrocarbon Solvent

FORMULA: Hydrocarbon Mixture

DOT PROPER SHIPPING NAME: PETROLEUM NAPHTHA

D.O.T. HAZARD CLASS: COMBUSTIBLE LIQUID

D.O.T. IDENTIFICATION #: UN1255 D.O.T. LABEL: Combustible

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	TLV LEVEL	PEL LEVEL
Paraffins	47%	Not Estab.	Not Estab.
Naphthenes	50%	Not Estab.	Not Estab.
Aromatics	3%	Not Estab.	Not Estab.

SECTION III - PHYSICAL DATA

BOILING POINT (DEG. F): 316 - 358
FREEZING POINT (DEG.F): Not Estab.
VAPOR PRESSURE (MM HG): 7.5 @100 F
VAPOR DENSITY (AIR=1) : 4.7
SOLUBILITY IN WATER: Negligible

SPECIFIC GRAVITY: 0.76
PERCENT VOLATILE
BY VOLUME%: 100 %
EVAPORATION RATE(nBuAc): 0.15

HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE, WI 53226

MATERIAL SAFETY DATA SHEET

SECTION III - PHYSICAL DATA

APPEARANCE AND ODOR: Light-colored liquid. Typical Hydrocarbon odor.

SECTION IV - FIRE EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): 104 Deg. F. (TCC).

FLAMMABLE LIMITS LEL: 1.0 UEL: 7.0

EXTINGUISHING MEDIA: Water spray. Dry Chemical. Carbon Dioxide. Alcohol Foam.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area of unprotected personnel. Wear protective clothing including a NIOSH-Approved self-contained breathing apparatus. Cool fire-exposed containers with water spray. Avoid water accumulation. Product may float and be reignited at water's surface. Run-off from fire control may cause pollution.

UNUSUAL FIRE EXPLOSION HAZARDS: COMBUSTIBLE LIQUID.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: 500 ppm (OSHA 29 CFR 1910.Z)
100 ppm (ACGIH 1985-86)

EFFECTS OF OVEREXPOSURE

EYE CONTACT: Short term liquid or vapor contact may result in slight irritation. Prolonged or repeated contact may be more irritating.

SKIN CONTACT: Prolonged and repeated contact with skin can cause defatting and drying of the skin which may result in skin irritation and dermatitis.

INHALATION: High concentrations or prolonged exposure to lower concentrations may be slightly irritating to mucous membranes. Inhalation overexposure can lead to central nervous system

SECTION V - HEALTH HAZARD DATA

depression producing effects such as headaches, nausea, dizziness and loss of consciousness.
INGESTION: Liquid ingestion may result in vomiting; aspiration (breathing in of liquid into the lungs) must be avoided as liquid contact with the lungs can result in chemical pneumonitis and pulmonary edema/hemorrhage.
OTHER: Reports of animal test studies have shown possible effects to: the kidneys. The relevance of these effects to man is unknown.

EMERGENCY AND FIRST AID PROCEDURES
EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during this flushing with water. Call a physician immediately.
SKIN CONTACT: Flush area with water while removing contaminated clothing and shoes. Follow by washing with soap and water. Do not reuse clothing or shoes until cleaned. If irritation persists, get medical attention.
INGESTION: Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Contact a physician immediately. NOTE TO THE PHYSICIAN: Depending upon the amount of material ingested and retained, as well as the toxicity of the product, gastric lavage should be considered. Keep patient's head below hips to prevent pulmonary aspiration. If comatose, a cuffed endotracheal tube will prevent aspiration. Consult a poison control center.
INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. CALL A PHYSICIAN.

SECTION VI - REACTIVITY DATA

STABILITY: X STABLE ___ UNSTABLE
CONDITIONS TO AVOID: Avoid contact with heat, sparks, and open flame.

HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE, WI 53226

MATERIAL SAFETY DATA SHEET

SECTION VI - REACTIVITY DATA

INCOMPATABILITY: Strong Oxidizing Agents. Acids. Alkalies.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition may produce Carbon Monoxide, Carbon Dioxide, and unidentifiable organic materials.

HAZARDOUS POLYMERIZATION: ___MAY OCCUR _X_WILL NOT OCCUR

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
COMBUSTIBLE MATERIAL. Eliminate all sources of ignition. Evacuate unprotected personnel from area. Maintain adequate ventilation. Use proper Safety Equipment. Contain spill, place into drums for proper disposal. Soak up residue with non-flammable absorbent material. Place in non-leaking containers for immediate disposal. Flush remaining area with water to remove trace residue and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs. Under EPA-CWA, this product is classified as an oil under Section 311. Spills into or leading to surface waters that cause a sheen must be reported to the National Response Center, 800-424-8802.

WASTE DISPOSAL METHOD: Observe all Local, State, and Federal Regulations. Dispose of at approved Landfill Site or Waste Treatment Facility. Reclaim (recycle) solvent. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks or other sources of ignition. EPA-RCRA Hazardous Waste Number = D001.

SECTION VIII - SPECIAL PROTECTION INFORMATION

CONSULT SAFETY EQUIPMENT DISTRIBUTOR

RESPIRATORY PROTECTION: If TLV is exceeded wear: NIOSH-Approved

HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE, WI 53226

MATERIAL SAFETY DATA SHEET

SECTION VIII - SPECIAL PROTECTION INFORMATION

self-contained breathing apparatus. NIOSH-Approved organic respirator.

VENTILATION: Maintain adequate ventilation. Keep levels below recommended TLV. Use explosion-proof equipment. Avoid mist formation.

PROTECTIVE GLOVES: Polyvinyl Alcohol. Neoprene.

EYE PROTECTION: Chemical Safety Goggles. Do not wear contact lenses.

OTHER PROTECTIVE EQUIPMENT: Eye-wash station. Safety shower. Rubber apron. Chemical safety shoes. Protective clothing.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
COMBUSTIBLE LIQUID. Store in cool, well-ventilated area away from all sources of ignition and out of direct sunlight. Ground all equipment to prevent accumulation of static charge. Keep containers tightly closed. Relieve pressure in drums weekly. Store away from incompatable materials.

OTHER PRECAUTIONS: Avoid contact with skin and eyes. Do not swallow. Use with adequate ventilation. Avoid prolonged or repeated breathing of vapors. Wash thoroughly after handling. Avoid dust or mist formation.

SECTION X - SUPPLEMENTAL HEALTH INFORMATION

CARCINOGEN CONTENT

%	PPM	INGREDIENT	IARC	NTP	OSHA

HYDRITE CHEMICAL CO.
2655 N. MAYFAIR ROAD
MILWAUKEE, WI 53226

MATERIAL SAFETY DATA SHEET

SECTION X - SUPPLEMENTAL HEALTH INFORMATION

NOTE : This product does not contain any known or potential carcinogens as listed in NTP, IARC, or OSHA.

LD50 ORAL	: Rat: > 25 ml/kg (Similar Product - Shell)
LD50 SKIN	: Rabbit: > 4 ml/kg (Similar Product - Shell)
LC50 INHALATION	: Rat: 700 ppm/4H (Similar Product - Shell)

** ** ** ** ** ** ** ** ** ** ** **

The data in this Material Safety Data Sheet relates only to the specific material designated and does not relate to its use in combination with any other material or process. The data contained is believed to be correct. However, since conditions of use are outside our control it should not be taken as a warranty or representation for which HYDRITE CHEMICAL CO. assumes legal responsibility. This information is provided solely for your consideration, investigation, and verification.

CHEMICAL SUBSTANCES INVENTORY SHEET

Department: 574-8 Dated: 8-5-87

Department Head: RONALD G. WAXLER Signature: Ronald G. Waxler

CHEMICAL/SUBSTANCE			
Trade Name (if any):	Generic Name (Ingredients):	Area/Process Where Used:	Manufacturer/Supplier
HYDROXYL AMMONIUM PERCHLORATE	H.A.P	CELL 5	RIDDEL-DEHAEL AKTIENG SELLSCRAFT
OTTO FUEL		CELL 5	U.S.N ORDNANCE STATION
ANHYDROUS HYDRAZINE	N2H4	CELL 8,9,11 & 12	OLIN CORP
THERMINOL 66		CELL 2	MONSANTO
SKYDROL 500		CELL 19	MONSANTO
MIL-5606		CELL 3,6, & 7	MOBIL & EXXON
MOBIL JET II MIL-23699		GEARBOXES	MOBIL
DTE-25 LIGHT OIL		MACHINE OIL	MOBIL
MOBIL-300		CELL 16	MOBIL
MOBIL-350		CELL 5	MOBIL
MOBIL-084		TEST STAND GEARBOXES	MOBIL
AVREX-201		CELLS 3,6,& 7	MOBIL
RARUS-427		COMPRESSOR OIL	MOBIL
MIL-46152	10W-30	FORKTRUCK	MOBIL
DTE-797		PAC-1 & 3	mobil
~~AVIATION~~ UNIVERSAL ATF	DEXTRON-X	AIR-A-PLANE	MOBIL
MIL-7808		LUBE OIL	EXXON
MIL-8188ø C		LUBE OIL	AMERICAN OIL CO.

CHEMICAL SUBSTANCES INVENTORY SHEET

Department: 574-8 **Dated:** 8-5-87

Department Head: RONALD G. WAXLER **Signature:** [signature]

CHEMICAL/SUBSTANCE			
Trade Name (if any):	Generic Name (Ingredients):	Area/Process Where Used:	Manufacturer/Supplier
MOBIL JET 254		CELL 17	MOBIL
CAUSTIC SODA		WATER TREATMENT	PLANT ENGINEERING
SULFURIC ACID		WATER TREATMENT	"
K.O.H.	POTASSIUM HYDROXIDE	CELL 5 EXHAUST LINE	VIKING CHEMICAL
DIRL STRIP		VALVE RM /SONIC CLEANER	SWEN SONIC CORP.
BRAKE FLUID		CELL 3 & 6	NAPA
SILT DISPERSANT		COOLING TOWERS	WESTERN CHEMICAL
DIVER SCALE		FILTER CLEANING	DIVERSY CHEMICAL
MILKSTONE		CELL 2-HT EXCHANGER CLEANER	ROCKFORD CHEMICAL CO.
ARGON		WELDING	ROCKFORD INDUSTRIAL GAS
OXYGEN		WELDING & CELL 13	ROCKFORD INDUSTRIAL GAS
APIEZON 'L'		SPACE SHUTTLE FUEL PUMP	
MERCURY		MANOMETER FLUID	
GREASE		SPLINE LUBRICATION	TEXACO
RTV		GENERAL USE	GE
CONAX	STARTER CARTRIDGES	ENGINE STARTERS	CONAX
EXXON TURBO OIL 2380		GEAR BOXES	EXXON

CHEMICAL SUBSTANCES INVENTORY SHEET

Department: 574-8

Dated: 8-5-87

Department Head: RONALD G. WAXLER

Signature: Ronald G. Waxler

CHEMICAL/SUBSTANCE			
Trade Name (if any):	Generic Name (Ingredients):	Area/Process Where Used:	Manufacturer/Supplier
MIL-83282		SPACE SHUTTLE	BRAY OIL CO.
MICRONIC-882-A		CELL 1 & 10	BRAY OIL CO.
MICRONIC-745		CELL 1 & 10	BRAY OIL CO.
DUO SEAL	VACUUM PUMP OIL	ALL VACUUM PUMPS	SARGENT-WELCH
ISOPROPYL ALCHOL		SPACE SHUTTLE	VIKING CHEMICAL
KOLDPHIL	SOLVENT	ALL CELLS	PLT-6 OIL ROOM
STODDARD	SOLVENT	ALL CELLS	PLT-6 OIL ROOM
DIBUTYLPTHALATE		CELL 5	THOMPSON-HAYWARD
LEXOL-4DSM		CELL 2	SANTA BARBARA CHEMICAL
FREON T.M.C.		SIGNAL CON. RM	MCKESSON CHEMICAL CO.
DOWTHERM SR-1		BALTIMORE AIR COOLER	MCKESSON CHEMICAL CO.
SUR-JEX		FILTER CLEANER	TURCO
JP-4		CELL 3,6,& 7	PHILLIPS PETROLEUM
JP-8		CELL 13	PHILLIPS PETROLEUM
MULTIONIC FORM 251		BALTIMORE AIR COOLERS	WESTERN CHEMICAL
ALGAE CONTROL		BALTIMORE AIR COOLERS	WESTERN CHEMICAL
MOTOR OIL	10W-50	CELL 16	SHELL
AVIATION GAS		CELL 16	

CHEMICAL SUBSTANCES INVENTORY SHEET

Department: 583 (TEST LOOP MAINTENANCE) Dated: Oct 1, 1989

Department Head: _____ Signature: _____

CHEMICAL/SUBSTANCE			
Trade Name (if any):	Generic Name (Ingredients):	Area/Process Where Used:	Manufacturer/Supplier
ACETYLENE	ACETYLENE		LIQUID AIR CORP.
ADHESIVE	GRADE A PART 88		LOCTITE CORP
"	GRADE AA		" "
CONTACT KLEEN			GC ELECTRONICS
DURA-GUARD			NATIONAL CHEMSEARCH
DYKEM	STAINING COLORS		DYKEM CO.
"	OPAQUE SERIES		" "
EPOXY PATCH	EPOXY		HYSOL DIVISION
FREEZ-IT.	ANTISTATIC SPRAY		CHEMTRONICS
FREON TF			DUPONT
FREON TMC			"
HD CALCIUM GREASE	GREASE		CONOCO
MOBIL GREASE 28	"		MOBIL
2346 LOW TEMP	"		TEXACO
GLYPTAL LAQUER	INSULATING LAQUER		GLYPTAL, INC
LPS CONTACT CLEAN	CONTACT CLEANER		HOLT LLOYD CORP.
MS-230	CONTACT RE-NU		MILLER-STEPHENSON
MOBIL JET OIL II			MOBIL

CHEMICAL SUBSTANCES INVENTORY SHEET

Department: 583 (Test Equip Maintenance) **Dated:** Oct 1, 1987

Department Head: _____ **Signature:** _____

CHEMICAL/SUBSTANCE			
Trade Name (if any):	Generic Name (Ingredients):	Area/Process Where Used:	Manufacturer/Supplier
Otto Fuel II	Otto Fuel		Naval Ordinance
Spray Paint	Paint		Glidden
Rosin Flux 197	Solder Flux		Kester
Rosin Flux 1544	" "		"
Skydrol	Hydraulic Fluid		Monsanto
Solder XM-214	Solder Wire		Gardiner Solder Co.
Tin-Silver-Lead	Solder		Lucas Milhaupt
Solvent Degreaser	Brulin Solvent		Brulin
Stoddard Solvent	Stoddard		Hydrite / Safety Kleen
1.1.1 Trichloroethane	Kold Phil		Hydrite / Safety Kleen
WD-40	WD-40		WD-40 Company

CHEMICAL SUBSTANCES INVENTORY SHEET

Department: 583-6 (Test Equipment Maintenance) **Dated:** 4/24/87

Department Head: _____ **Signature:** William Beyer

CHEMICAL/SUBSTANCE			
Trade Name (if any):	Generic Name (Ingredients):	Area/Process Where Used:	Manufacturer/Supplier
	Locktite	Various Areas	
LPS 1 Greaseless		Various Lubricating Uses	Hoyt Lloyd Corp.
Lubricant			
Tri-Flow w/ Teflon	Penetrating Lube		Costa Mesa Lubricants
LPS Contact Cleaner			Hoyt Lloyd Corp.
Freeze-It	100% Freon 12	Trouble Shooting Aid	Chemtronics, Inc.
Contact Re-Nu	Contact Cleaner		Miller-Stephenson Co.
MS-230			
Al-Co	Aluminum Cable Joint Compound		Thomas & Betts Co.
Slide-Tap It	Tapping Lubricant		Percy Harms Corp.
Kester 44	Rosin Core Solder		Kester Solder
Epoxy Patch	Contains Diethylene Triamine		Hysol Div. of Dexter Corp.
Tap Magic	Cutting Fluid		Steco Corp.
Scotch 847 Adhesive	Glue		3M
TMC 22 Freon		Cleaning Solder Joints	
WD-40	Penetrating Lubricant		
Yellow 77	Wire Pulling Lubricant		Ideal Industries
1,1,1 Trichloroethane	Koldphil	Cleaning Parts	

CHEMICAL SUBSTANCES INVENTORY SHEET

Department: 583-6 (Test Equipment Maintenance) **Dated:** 4/24/87

Department Head: _____ **Signature:** William Beyer

CHEMICAL/SUBSTANCE			
Trade Name (if any):	Generic Name (Ingredients):	Area/Process Where Used:	Manufacturer/Supplier
Brulin		Cleaning Elec. Parts	
Spray Paints		Touch Up Printing	
Scotch-Kote Elec. Coating		Splice Sealer	Division of 3M
Dolph Spray AC-29-75	Moisture and Fungus Resistant	Varnish	John C. Dolph Co.
Glyptal 1201-A	Insulating Enamel	Repairing Motors	General Electric
B-Lube	Belt Dressing		National Chemsearch
Dura-Guard	Battery Cleaner		National Chemsearch
Dykem	Layout Dye		Dykem Company
Fel-Pro C5-A	Hi-Temp Anti Seize Compound		Fel-Pro, Inc.
3-in-one Oil		Light Duty Lubricant	
Aero Kroil	Penetrating Lubricant		Kano Laboratories
Dimon	Silicon Lubricant		National Chemsearch
Thread Guard	Anti-Seize Compound		Crane Packing Co.
Jet Cil II	Aviation Lubricant		Mobil & Stauffer
Skydrol			Monsanto
Otto Fuel			Monsanto

5.a. From approximately 1962 to 1972, a commercial weed killer could have been mixed with waste oil and sprayed or poured on the ground underneath the fence at 1400 Harrison Avenue in order to kill weeds. In the mid-70's a commercial weed killer alone was applied. With respect to 1979 and 1980, one employee recollects the infrequent use of still bottoms to kill weeds. Still bottoms are used 1-1-1 Trichlorethane which is periodically removed from the recycling still and consists of approximately 60% waste oil and 40% 1-1-1 Trichlorethane. These still bottoms may have been diluted further with waste oil. From 1980 to the present, a commercial weed killer has been used exclusively.

b. See 5.a.

c. From 1962 to 1972 only one application was made per season to kill weeds. Approximately 55 gallons of the mixture was used per application. The mixture may have contained approximately 70 - 75% oil, 24 - 29% solvent, and 1 - 4% weed killer, or 95 - 99% oil and 1 - 4% weed killer. In the mid-70's the amounts of commercial weed killer used are unknown. During 1979 through the fall of 1980, approximately 15 to 20 gallons of still bottoms were used per year.

d. Sundstrand owns four storage sheds located at 1400 Harrison Avenue. Surrounding the storage sheds is a chain link fence around which weeds and grass grow. During certain periods, a mixture of commercial weed killer, waste oil, and occasionally, 1-1-1 Trichloroethane or Perchloroethylene could have been used to kill the weeds on this property.

e. United States Environmental Protection Agency notified on April 27, 1989 in Sundstrand's response to 104(e) Request for information regarding Southeast Rockford Site.

PLANT 8 DRAINAGE

5.a. From approximately 1966 to 1978, waste water containing trace amounts of Hydrazine and solvents drained from a settling pit to a field south of Plant 8. After 1978, when a waste tank was installed to capture this waste water, no waste water drained from Plant 8 to the field. There may continue to be infrequent overflows of a limited volume due to very heavy rainfall, etc.

In March, 1979, the settling pit overflowed, bypassing the waste water tank, and spilled onto the field south of Plant 8.

b. See 5.a.

c. Unknown.

d. See 5.a.

e. When the settling pit overflowed in March, 1979, the IEPA was notified and visited Plant 8. See Attachment 5.

Attachment 3

CHROMIC ACID SPILL PLANT 1

5.a. Two barrels of chromic acid leaked from their containers in 1975 or 1976.

b. The barrels froze and burst.

c. It is believed that no chromic acid was released into the environment.

d. Plant 1 storage area.

e. All the chromic acid was cleaned up in accordance with applicable standards and practices.

LEAK IN UNDERGROUND SULFURIC ACID LINE

5.a. The sulfuric acid release occurred sometime in the 1970's.

b. The material was released when a pipe containing the material burst.

c. It is believed that a very small volume, if any, was released into the soil.

d. Plant 6.

e. The soil was treated with soda ash. The spill was handled in accordance with applicable standards and practices.

SUNTEC WASTE OIL TANK OVERFLOW

5.a. In 1980 or 1981, a waste oil tank overflowed at the former Sundstrand facility at 2210 Harrison. This facility is now owned by Sunctec, Inc.

b. Unusual freeze-thaw weather conditions cause a waste oil tank to overflow.

c. Less than 100 gallons of a water/oil mix comprised chiefly of water was spilled.

d. See 5.a.

e. The Illinois Environmental Protection Agency was notified as required.

List OF I.E.P.A. Visits From 1976-1981

August 1977	Plant 6 -- New Southwest Parking Lot. Rain washed oil into drainage ditch. I.E.P.A. visit
March 1979	Plant 8 -- Afterburner pit spilled South to Railroad tracks. I.E.P.A. visit
1979	Plant 8 -- Three (3) other visits. I.E.P.A. checking on progress of New Storage Tank. (March spill)
January 24, 1980	Plant 6 -- Stoddard Solvent sill. I.E.P.A. visit
February 21, 1980	Plant 1 -- Chromic Acid Strip spill. I.E.P.A. visit
September 30, 1980	Plant 1 -- JP4 spill - South Fire Lane. I.E.P.A. visit
December 8, 1980	Plant 6 -- R.C.R.A. Inspection of records and tour.
February 18, 1981	Plant 1 & 6 -- Tour by I.E.P.A. (pretreatment)
April 22, 1981	Plants 1 & 6 -- Degreaser Inspection. I.E.P.A. visit
July 14, 1981	Plant 6 -- P.C.B. record inspection. U.S.E.P.A. visit
July 16, 1981	Plant 6 -- P.C.B. Tour U.S.E.P.A. visit

File

Sundstrand Aviation Operations
unit of Sundstrand Corporation

4747 HARRISON AVENUE, P.O. BOX 7002 • ROCKFORD, ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 257-440

May 30, 1986
EPA86-020

Regional Administrator
U. S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois 60604

Reference: Sundstrand Aviation Operations ILD010219665
2010300048

Dear Sir:

This letter contains a follow-up report of a fuel spill which occurred at our 2421 11th Street, Rockford, Illinois location on Monday, May 19, 1986.

Owner/Operator:	Sundstrand Aviation Operations 4747 Harrison Avenue Rockford, Illinois 61101 (815) 226-6000
Location of Spill:	Sundstrand Aviation Operations 2421 11th Street Rockford, Illinois 61101 (815) 226-6000 USEPA # - ILD010219665 IEPA # - 2010300048
Time and Date:	Spill discovered at approximately 1:50 P.M. Monday, May 19, 1986. Was stopped at approximately 2:10 P.M. on the same date.
Type of Material:	JP-4 Jet Fuel
Volume of Spill:	Approximately 200 gallons.

Cause of Spill:

A. A leaking union in a fuel line located in a pit.

B. A full waste tank caused a back up in the lines. The sump tank filled and leaked out the removable lid.

C. A joint in the storm sewer pipe running through the pit seperated allowing the overflow from the sump and the leaking fuel from the leaking union to flow into the storm sewer.

Measures taken to prevent reoccurence: The source of JP-4 was stopped. The storm sewer joint was repaired. The leaking union on the fuel line was repaired. A concrete floor was poured under, over and around the storm sewer and underneath the sump tank. The sump tank and pit has been added to our weekly preventive maintenance inspection. The repair was completed by May 22, 1986.

Recovered Material: Approximately 110 gallons of waste was recovered and disposal is pending proper permitting to an approved disposal facility.

Risk Assessment: No injuries resulted from this spill. The storm sewer was flushed with water.

Our internal contingency plan was activated upon discovery of the spill. The Illinois Environmental Protection Agency and the Rockford Fire Department were notified of the spill.

If you have any questions or require additional information please let me know.

Sincerely,

Al Munn
Supervisor ATG Loss Control

AM/jw
cc: Illinois Environmental Protection Agency
Director of Land Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

Illinois EPA
4302 North Main Street
P. O. Box 2903
Rockford, IL 61132

Rockford Fire Department
204 S. 1st Street
Rockford, Illinois 61104

Corporate Loss Control

SANITARY DISTRICT OF ROCKFORD

ACCIDENTAL DISCHARGE REPORTING FORM

This form must be completed and returned to the District Director within fifteen (15) days following the report of an accidental or deliberate discharge to the sanitary sewer. Completion of this form is a requirement of Ordinance 361 (Article IV, Section 10C) and does not relieve the User of any liabilities due to the accidental discharge. Prompt and accurate reporting does reflect that the User is attempting to address the problem.

Company Name: Sundstrand Aviation Operations

Address: 2421 11th Street Phone: 226-6000

Person completing this form: Al Munn

Title: Supervisor ATG Loss Control

Time and Date accidental discharge started and stopped:

Discovered
~~Started~~ 1:50 ~~am~~/pm on 5-19-86 (date) and

stopped 2:10 ~~am~~/pm on 5-19-86 (date).

Type of material spilled: JP-4 Jet Fuel

Volume of spill (give units): estimate 200 gallons

Chemical analysis of a representative sample of the spilled material. Show concentration of all compounds in the spilled material. If a sample of the spilled material is not available, list all known contents present in the discharged material.

COMPOUND	CONCENTRATION (mg/l)
JP-4	
Water	

Location of accidental discharge:

Plant process area JP-4 Test Cell **Material Storage area** _____

In-plant transfer area _____ **Shipping/Receiving area** _____

Other (specify) Outside scupper drain accumulation tank

Is spill containment present in the area where the accidental discharge occurred?

Yes X **No** _____

Is spill containment present in other areas within the plant?

Yes X **No** _____

Describe the cause of the reported discharge:

1. A leaking union in a fuel line located in a pit.

2. A full waste tank caused a back up in the lines. The sump filled and leaked out the top.

3. A joint in the storm sewer pipe running through the pit seperated allowing the overflow from the sump and the leaking fuel from the leaking union to run into the storm sewer.

Describe what actions were taken at the time to control the spill (eg. sealed floor drain, use of sorbants or foams, etc.):

Supply source stopped, leaky pipe repaired, excess fuel pumped, leaky storm plugged with pipe putty.

Did the spill receive any type of treatment?

Yes X **No** _____

If yes, please describe:

Flushed storm sewer with water.

Was any part of the spill contained and prevented from discharge to the ~~sanitary~~ storm sewer? Yes X No ____

If yes, please describe how that waste was disposed.

JP4 was pumped into pumper truck and disposed into waste tank directly.

Barrels of sludge collected with disposal pending.

Describe fully what measures will be taken to prevent similar accidents in the future. The storm sewer joint was repaired. Leaky pipe repaired. A concrete floor was poured under and around the storm sewer and underneath the steel sump. This sump has been added to our weekly preventive maintenance inspection.

Anticipated time schedule in which the above-stated measures will be completed.

This repair was completed by May 22, 1986.

This accidental discharge was reported to the ~~District~~ IEPA on 5-19-86 (date) at 2:30 ~~am~~/pm by Al Munn Al Munn (name), Supv. ATG Loss Control (title).

RS/ra

PLANT ENGINEERING SERVICE REQUEST

TO: MANAGER, PLANT ENGINEERING

REQUESTOR: Roger FRANK

DEPT: 612 PLANT 1

PHONE: 8035 DATE 5/20/86

APPROVED BY SECTION MGR Wm Bylsma 5-20-86

SERVICE REQUESTED: (CHECK APPLICABLE)

- ☐ Add New Equipment
- ☐ Overhaul Equipment
- ☒ Fire or Safety
- ☐ Estimate Only
  Date Req'd _____
- ☐ Upgrade / Modify Facilities
- ☐ Engrg Study-Date Req'd _____
- ☐ Relocate Existing Equipment
- ☐ Proceed as described - Requestor provide approval & charge number below

This form is not to be used for routine maintenance of facility / machine tool equipment items or additional space.

DESCRIPTION - Include department number, plant, asset number, bay specifications, sketches or prints. NOTE! If sufficient information is not included this form will be returned to the requestor.

Repair waste tank pit located behind JP4 cold cell. Repair work should meet all EPA guidelines which become effective in 1987. Contact Al Munn, Roger Frank and Bill Bylsma for details.

FOR PLANT ENGINEERING USE ONLY

ASSIGNED TO: JOE VAVRA / AL MUNN

ASSIGNED BY: MEK

DATE: 5/21/86

SPECIAL INSTRUCTION: _____

ESTIMATED COST

CAPITAL _____

EXPENSE _____

TOTAL _____

APPROVED BY _____

DATE _____

REQUESTOR AUTHORIZATION TO PROCEED WITH DESCRIBED WORK / ESTIMATED AMOUNT

SECTION MGR. _____ DEPT. _____

DATE APPROVED: _____

DATE COMPLETION REQ'D _____

CHARGE NO. (ATTACH AFE IF CAPITAL)

615 - 03220

RECEIVED BY PLANT ENGINEERING FOR EXECUTION

M E Klockenga
PLT. ENG. APPROVAL

5/21/86
DATE

FORM 7480A-2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:
5HR-11/ERS-SPCC

AUG 2 9 1986

Mr. Al Munn
Supervisor ATG Loss Control
Sundstrand Aviation Operations
P.O. Box 7002
Rockford, Illinois 61125-7002

Dear Mr. Munn:

This will acknowledge receipt of your transmittal of the Incident Report for the May 19, 1986, spill occurrence at your facility.

Please note that the oil spill located at 2421 11th Street and reported on May 30, 1986, has been recorded.

We would like to take this opportunity to remind you that under the Federal Water Pollution Control Act, Section 311(b)(5) if a spill occurs, the regulations require that it be reported to the Federal Government.

We have enclosed a poster for your convenience, which identifies state, regional and national emergency phone numbers. These numbers may be used on a 24-hour, 7-day per week basis. A call to the National Response Center (800-424-8802) is sufficient to meet the Federal notification requirement.

Your efforts toward maintaining a healthy environment are appreciated.

Sincerely,

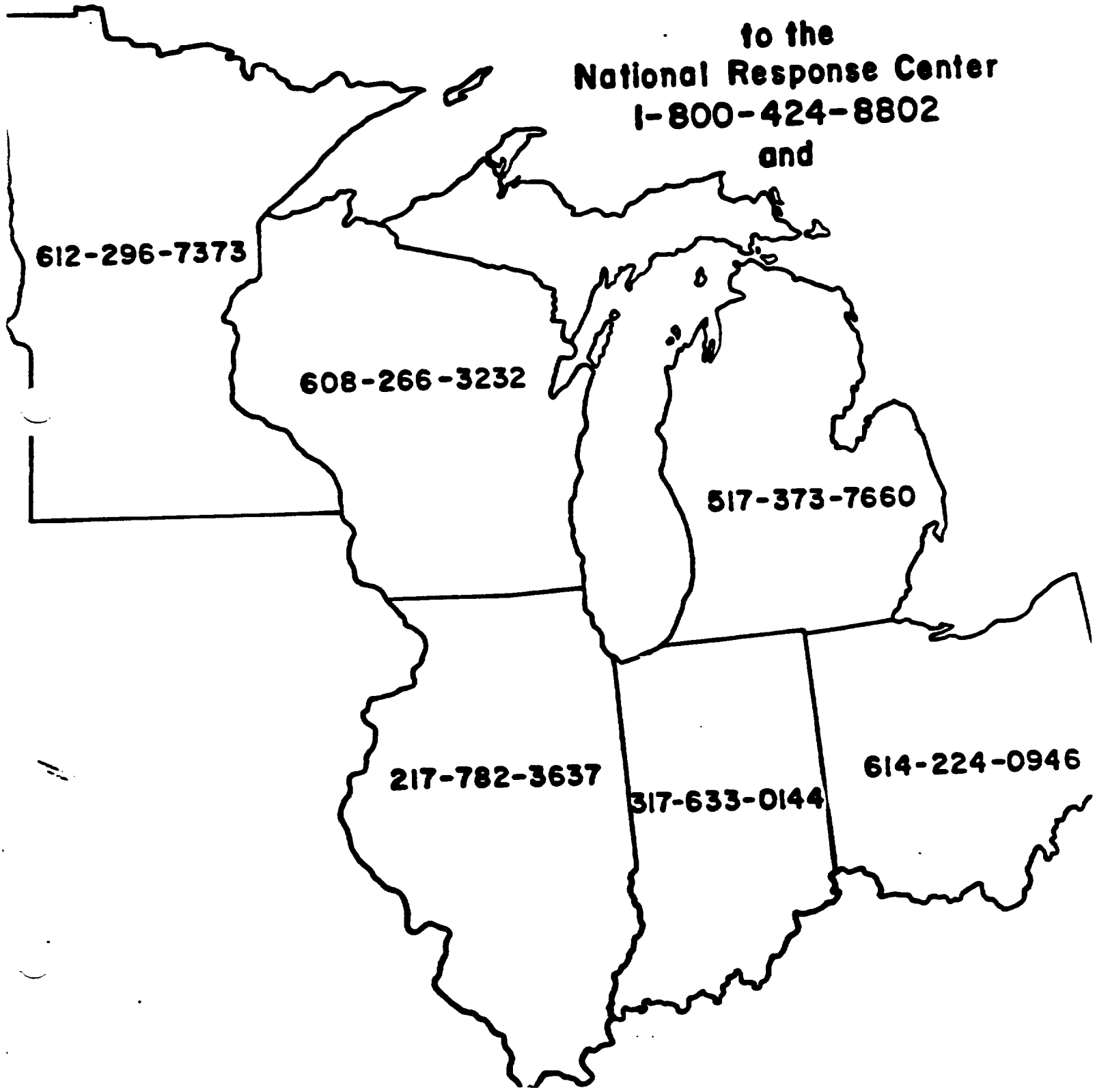
Robert J. Bowden, Chief
Emergency Response Section

Enclosure

IN THESE AREAS

REPORT OIL OR CHEMICAL SPILLS

to the
National Response Center
1-800-424-8802
and



P 421 636 271

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Rockford Fire Department Attn: Mr. Fred Carneal	
Street and No. 204 S. 1st. Street	
P.O., State and ZIP Code Rockford, IL. 61104	
Postage	$ .22
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	.70
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$1.67
Postmark or Date	JUN 9 1986

PS Form 3800, Feb. 1982

Al Keenan 581

P 421 636 273

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Mr. Harris Chinn Il. Environmental Protection Agency	
Street and No. 4302 North Main St	
P.O., State and ZIP Code P.O. Box 2903, Rockford, IL. 61132	
Postage	$ .22
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	.70
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$1.67
Postmark or Date	JUN 9 1986

PS Form 3800, Feb. 1982

Al Keenan 581

P 421 636 272

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to IL Environmental Protection Agency Division of Land Pollution Control	
Street and No. 2200 Churchill Rd.	
P.O., State and ZIP Code Springfield, IL. 62706	
Postage	$ .22
Certified Fee	.75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	.70
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$1.67
Postmark or Date	

PS Form 3800, Feb. 1982

Al Keenan 581

421 636 270

RECEIPT FOR CERTIFIED MA

NO INSURANCE COVERAGE PROVIDE
NOT FOR INTERNATIONAL MAIL

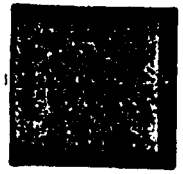
(See Reverse)

Sent to Regional Adminis U.S. Environmental Pro	
Street and No. Rayson V 230 S. Dearborn St	
P.O., State and ZIP Code Chicago, IL. 60604	
Postage	$.
Certified Fee	.
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	.
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.
Postmark or Date	JUN 9 1986

PS Form 3800, Feb. 1982

[redacted]

[redacted]



PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
- ☐ Show to whom and date delivered ..... ____¢
- ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY ..... ____¢
(The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
Regional Administrator
U.S. Environmental Protection Agency
Region V.
230 S. Dearborn St.
Chicago, Ill. 60604

4. TYPE OF SERVICE:
☐ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER
P421 636-270

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent
C.A Lotz

5. DATE OF DELIVERY
6/12/86

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-593

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
- ☐ Show to whom and date delivered ..... ____¢
- ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY ..... ____¢
(The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
Illinois Environmental Protection
Division of Land Pollution Control
2200 Churchill Rd
Springfield, Ill. 62706

4. TYPE OF SERVICE:
☐ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER
P421 636-272

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent
Illinois Environmental Protection Agcy.
2200 Churchill Road
Springfield, Illinois 62706

5. DATE OF DELIVERY
JUN 11 1986

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-593

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
- ☐ Show to whom and date delivered ..... ____¢
- ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY ..... ____¢
(The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
Rockford Fire Department
att. Mr. Fred Connell
204 S. Wyatt Street
Rockford, Ill. 61104

4. TYPE OF SERVICE:
☐ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER
P421 636-271

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent
B. Rogers

5. DATE OF DELIVERY
6-10-86

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-593

Sundstrand Aviation Operations
unit of Sundstrand Corporation

4747 HARRISON AVENUE. P.O BOX 7002 • ROCKFORD. ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 257-440

August 25, 1986
EPA86-033

Regional Administrator
U. S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois 60604

Re: Sundstrand Aviation Operations - ILD010219665
2010300048

Dear Sir:

This letter contains report of a fuel spill which occurred at our Plant #1 located at 2421 11th Street, Rockford, Illinois on Wednesday, August 20, 1986 at 8:45 P.M.

Owner/Operator:	Sundstrand Aviation Operations 4747 Harrison Ave. Rockford, Illinois 61101 (815) 226-6000
Location of Spill:	Sundstrand Aviation Operations 2421 11th Street Rockford, Illinois 61101 (815) 226-6000 USEPA #ILD010219665 IEPA #2010300048
Time and Date:	Spill discovered at 8:45 P.M. on Wednesday, August 20, 1986. Spill was stopped immediately.
Type of Material:	JP-4 Jet Fuel
Volume of Spill:	Approximately 400 gallons
Cause of Spill:	2" overflow line could not handle volume of JP-4 fuel. Fuel backed up in tank forcing fuel out of 3" vent pipe. Some fuel entered the storm sewer drain. The remainder was contained.

Measures taken to prevent reoccurrence: The overflow pipe from the used JP-4 tank to the Waste 7024 and JP-4 tank was enlarged from 2" to 3".

The gauges on the tanks will be recalibrated to insure accurate level readings.

Recovered Material: Four (4) 55 gallon drums of JP-4 contaminated oil dry.

Risk Assessment: No injuries resulted from this spill., The storm sewer was flushed with water.

Our contingency plan was used upon discovery of the spill. The Rockford Fire Department - Hazardous Material Team, the Illinois Environmental Protection Agency and the National Response Center were notified of the spill.

If you have any additional questions please contact ATG Loss Control at (815) 226-6934.

Sincerely,

Al Munn
Supervisor ATG Loss Control

AM/jw
cc: Illinois Environmental Protection Agency
Director of Land Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

Rockford Fire Department
204 S. 1st Street
Rockford, Illinois 61104

Illinois Environmental Protection Agency
4302 North Main Street
P. O. Box 2903
Rockford, Illinois 61132

Corporate Loss Control
Sundstrand Corporation

Corporate Legal Department
Sundstrand Corporation

Recd SEP 16 1986

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:
5HR-11/ERS-SPCC

SEP 12 1986

Al Munn, Supervisor
ATG Loss Control
Sundstrand Aviation Operations
Post Office Box 7002
Rockford, Illinois 61125-7002

Dear Mr Munn:

This will acknowledge receipt of your transmittal of the Incident Report for the August 20, 1986, spill occurrence at your facility.

Please note that the oil spill located at 2421 11th Street, Rockford, Illinois and reported on August 27, 1986, has been recorded.

We would like to take this opportunity to remind you that under the Federal Water Pollution Control Act, Section 311(b)(5) if a spill occurs, the regulations require that it be reported to the Federal Government.

We have enclosed a poster for your convenience, which identifies state, regional and national emergency phone numbers. These numbers may be used on a 24-hour, 7-day per week basis. A call to the National Response Center (800-424-8802) is sufficient to meet the Federal notification requirement.

Your efforts toward maintaining a healthy environment are appreciated.

Sincerely,

Denise Young

Denise Young
Environmental Protection Assistant

Enclosure

Sundstrand Aviation Operations
unit of Sundstrand Corporation

4747 HARRISON AVENUE, P.O. BOX 7002 • ROCKFORD, ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 257-440

December 12, 1986
EPA86-055

Illinois Environmental Protection Agency
Office of Emergency Management #29
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Dear Sir:

In response to an inquiry from Mr. James O'Brien dated December 8, 1986 in reference to an environmental incident involving our company on August 20, 1986 please find the following.

We have yet to dispose of the two fifty-five gallon drums of waste recovered from this incident. They are being stored on site in our Hazardous Waste Storage area pending disposition.

Our facility is a permitted Hazardous Waste Storage Facility, permit number 2010300048.

If you have any questions or require additional information please feel free to call myself at (815) 226-6934.

Sincerely,

Al Munn
Supervisor ATG Loss Control

AM/jw

Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-3637

December 8, 1986

Recd DEC 12 1986

Al Munn
Sundstrand Aviation Operations
4747 Harrison Avenue
Rockford, Illinois 61101

Dear Mr. Munn:

The attached information is being forwarded to your attention, as documentation of an environmental incident involving your company on August 20, 1986. As a result of this incident, waste product and/or contaminated materials were generated during the remedial phase of the incident requiring removal pursuant to: Title 35: Environmental Protection, Subtitle G: Waste Disposal. To verify proper disposal and compliance with the Illinois Environmental Protection Act, please submit copies of the appropriate signed manifests documenting removal operations to:

Illinois Environmental Protection Agency
Office of Emergency Management #29
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Your cooperation with this request will be appreciated. Should you have any questions, please contact Chuck Brutlag at 217/782-3637.

Sincerely,

James Patrick O'Brien, Manager
Office of Emergency Management

JOB:CWB:bls/0821g,48

cc: Incident Log
File

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
EMERGENCY RESPONSE UNIT

INCIDENT CONTROL SHEET CWB

NOTIFICATION INFORMATION

DATE: 8/21/86	TIME: 9:30 am	DUTY OFFICER: Brutlag
TYPE OF INCIDENT: Spill		REFERENCE CITY: Rockford
COUNTY: Winnebago	LOCATION: Sundstrand	
CALLER: Al Munn		RELAY FROM: Helen Lai - Rockford
CALL BACK NUMBER: 815/226-6934	CONTACT PERSON:	

GENERAL INFORMATION

MATERIAL INVOLVED: Jet Fuel		PHYSICAL STATE: Liquid
AMT. RELEASED: 200 - 400 gals	RATE OF DISCHARGE:	AMT. RECOVERED: 0
CONTAINER AND SIZE:		
LIABLE PARTY: Sundstrand	CONTACT PERSON:	
ON SCENE COORDINATOR:	CONTACT NUMBER:	

NATURE OF EMERGENCY

FIRE ☐ EXPLOSION ☐ HUMAN HAZARDS ☐ ENV. PROBLEMS: WATER ☐ AIR ☐ LAND ☐ PWS ☐

ACTION TAKEN: Spill occurred at 3:45 pm on 8/20/86. Ran off into storm sewer. Storm sewer flushed with water. Sundstrand to redesign system to prevent future problems. Storm sewer tributary to ditch → Kent River

ASSISTANCE NEEDED, RECOMMENDATIONS, AND COMMENTS: SIC 3561

Sundstrand's August 25, 1986 report indicates that 4-55 gallon drums of JP-4 Contaminated oil dry was generated.

NOTIFICATION: ESDA ☐ SFM ☐ CONSERVATION ☐ MINES & MINERALS ☐ PUBLIC HEALTH ☐ ISP ☐ MSD ☐

COOK CO DEC ☐ USEPA ☐ USCG ☐ USFW ☐ ORSANCO ☐

LOCAL FIRE DEPT ☐ LOCAL POLICE DEPT ☐ BORDERING STATE(S)_____ OTHER

IEPA NOTIFICATION

IEPA DAPC ☐ DWPC ☒ DLPC ☐ DPWS ☐ ENF ☐ MPC ☐ DLS ☐ ERU ☐ DIR OFF ☐

NAME: Helen Lai	NAME:
NAME:	NAME:
NAME:	NAME:
NAME:	
FOLLOW UP INVESTIGATION	
WRITTEN REPORT NEEDED YES ☐ NO ☐ DATE REPORT DUE	

IEPA/OTHER PERSONNEL ON SCENE

IL 532-0235
APC 191 4/80

058-002

MC
FILE PLANT 1
ATG HAZ WASTE

Sundstrand Aviation Operations

unit of Sundstrand Corporation

4747 HARRISON AVENUE. P.O. BOX 7002 • ROCKFORD. ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 257-440

August 28, 1986
EPA86-034

Regional Administrator
U. S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois 60604

Re: Sundstrand Aviation Operations - ILD010219665
2010300048

Dear Sir:

This letter contains report of a solvent spill which occurred at our Plant #1 facility located at 2421 11th Street, Rockford, Illinois on Thursday, August 28, 1986 at 10:30 A.M.

Owner/Operator:	SET Liquid Waste Systems 350 Sumac Road Wheeling, Illinois 60090 (312) 537-9221 USEPA #ILD000810549 IEPA #0049
Location of Spill:	Sundstrand Aviation Operations 2421 11th Street Rockford, Illinois 61101 (815) 226-6000 USEPA #ILD010219665 IEPA #2010300048
Time and Date:	Spill occurred at 10:30 A.M. on Thursday, August 28, 1986. Spill waste stopped immediately
Type of Material:	Naphthol Spirits (MIL-7024) Calibrating Fluid and water mixture (50/50 mix)
Volume of Spill:	100 gallons

Cause of Spill:	SET Waste hauler transferred air into waste tank which forced air and 100 gallons of waste mixture out of the top hatch on the tank truck. The driver estimated that 50 gallons of waste (25 gallons of Naphthol Solvent or 150 pounds) entered the storm sewer. The remainder was contained by Sundstrand Haz Mat Team.
Preventative Measures:	Equipment malfunction (Vacuum pump on waste truck) and human error contributed to this spill.
Recovered Material:	70 gallons (volume solid) of Naphthol Solvent contaminated oil dry.
Risk Assessment:	No injuries resulted from this spill.

Our contingency plan was put into action as soon as the spill was reported to plant security officers, the Rockford Fire Department, Hazardous Material Team, the Illinois Environmental Protection Agency and the National Response Center.

If you have any additional questions please contact:

SET Liquid Waste Systems, Inc.
350 Sumac Road
Wheeling, Illinois 60090
(312) 537-9221

or

Jeff Lindstrom ATG Loss Control
Sundstrand Aviation Operations
(815) 226-5241

Sincerely,

Jeffery A. Lindstrom
ATG Loss Control Analyst

JAL/jw
cc: Illinois Environmental Protection Agency
Director of Land Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

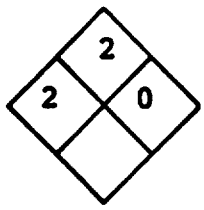
Rockford Fire Department
204 S. 1st Street
Rockford, Illinois 61104

Illinois Environmental Protection Agency
4302 North Main Street
P. O. Box 2903
Rockford, Illinois 61132

Corporate Loss Control
Sundstrand Corporation

Corporate Legal Department
Sundstrand Corporation

union MATERIAL HEALTH AND SAFETY BULLETIN



Union Chemicals Division
Petrochemical Group MIL - 7024

UCD No.: 856

Product Code No.: 1103

UN No. 1255

MANUFACTURER'S NAME	
Union Chemicals Division, Union Oil Company of California	
STREET ADDRESS	
1345 North Meacham Road 312-257-9300	
CITY, STATE, AND ZIP CODE	
Schaumburg, Illinois 60196	Business Phone: (312) 885-5450
EMERGENCY TELEPHONE NO.	
Transportation Emergencies call CHEMTREC (800) 424-9300 Health Emergencies Call Los Angeles Poison Control Center (24 hours) (213) 664-2121	

PRODUCT: Naphthol Spirits 66/3 CALIBRATING FLUID COMMON NAME: AMSCO Solv 1103 GENERIC NAME: Volatile Solvent CHEMICAL NAME: Not Applicable CHEMICAL FAMILY: Hydrocarbon Mixture DOT PROPER SHIPPING NAME: Not Applicable	WARNING STATEMENT: Caution Combustible. DO NOT induce vomiting if swallowed. For industrial use only.

Section I - - INGREDIENTS

	TLV*		TLV*
C_9-C_{11} Paraffins, Cycloparaffins & Aromatics	NE*		

*Threshold Limit Value A. OSHA ☐ B. ACGIH ☐ C. See Section III ☐ D. Other ☐

*Not Established

Form AM-6A02 (10-80) Printed in U.S.A.

Section II -- EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY: Have a physician call LOS ANGELES POISON CONTROL CENTER (24 hrs.) 213/664-2121

Eye Contact	If this product comes in contact with the eyes, flush with large quantities of water for at least 15 minutes and seek immediate medical attention.
Skin Contact	If this product comes in contact with the skin, wash with soap and large quantities of water. Seek medical attention if irritation from contact persists.
Inhalation	If breathing difficulties, dizziness, or lightheadedness occur when working in areas with high vapor concentrations, victim should seek air free of vapors. If victim experiences continued breathing difficulties, administer oxygen until medical assistance can be rendered. If breathing stops, begin artificial respiration and seek immediate medical attention.
Ingestion	If this product is swallowed, DO NOT induce vomiting. Seek immediate medical advice and/or attention.

Section III -- PHYSIOLOGICAL EFFECTS AND HEALTH INFORMATION

Eye Effects	This product may be an eye irritant.
Skin Effects	This product may cause skin irritation upon prolonged or repeated contact.
Systemic Effects	Various studies have shown a possible association with exposure to this product and the following: Narcosis in high concentration.

Section IV - - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type)	The use of respiratory protection depends on vapor concentration above the time-weighted TLV; use a NIOSH approved cartridge respirator or gas mask		
Ventilation	General mechanical ventilation may be sufficient to keep product vapor concentrations within specified time-weighted TLV ranges. If general ventilation proves inadequate to maintain safe vapor concentrations, supplemental local exhaust may be required. Other special precautions such as respiratory masks or environmental containment devices may be required in extreme cases.		
Protective Gloves	The use of impermeable gloves is advised to prevent skin irritation in sensitive individuals.	Eye Protection	Safety glasses, chemical goggles and/or face shields are recommended to safeguard against potential eye contact, irritation, or injury.
Other Protective Equipment	Impermeable aprons are advised when working with this product. The availability of eye washes and safety showers in work areas is recommended.		

Section V - - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid:
	Stable	X	
Incompatibility (Materials to Avoid)	This product is incompatible with strong acids or bases, and selected amines.		
Hazardous Decomposition Products	Thermal decomposition in the presence of air may yield carbon monoxide and/or carbon dioxide.		
Hazardous Polymerization	May Occur		Conditions to Avoid:
	Will Not Occur	X	

Section VI - - SPILL OR LEAK PROCEDURES

HIGHWAY OR RAILWAY SPILLS - CALL CHEMTREC 800/424-9300

Precautions In Case of Release or Spill	Keep sources of ignition and hot metal surfaces isolated from the spill. Flush spilled material into suitable retaining areas or containers with large quantities of water. Small amounts of spilled material may be absorbed into an appropriate absorbant.
Reportable Quantity	Notify Coast Guard National Response Center; Phone No. 800-424-8802, If Spill Is Greater Than ___ lbs (Kilograms)
Waste Disposal Method	Dispose of product in accordance with applicable local, county, state and federal regulations.

Section VII - - STORAGE AND SPECIAL PRECAUTIONS

Handling and Storing Precautions	Keep product containers cool, dry, and away from sources of ignition. Use and store this product with adequate ventilation. (See Section IV.)
Other Precautions	Personnel should avoid inhalation of vapors. (See sections I, II, III, V, VI) Personal contact with the product should be avoided. Should contact be made, remove saturated clothing and flush affected areas with water. (See sections II, IV, VI)

Section VIII - - FIRE AND EXPLOSION HAZARD DATA

DOT Flammability Classification	Combustible Liquid	Flash Point Range: ☐ Below 20° F, ☐ 20° F - 100° F ☒ 100° F - 200° F ☐ Over 200° F ☐ None to boiling
Extinguishing Media	Use foam, CO_2 or dry chemical fire fighting apparatus.	
Unusual Fire and Explosion Hazards	Keep work areas free of hot metal surfaces and other sources of ignition.	
Fire Fighting Procedures	The use of self-contained breathing apparatus is recommended for fire fighters. Water may be unsuitable as an extinguishing media, but helpful in keeping adjacent containers cool. Avoid spreading burning liquid with water used for cooling purposes.	

Section IX - - PHYSICAL DATA

Approximate Boiling Range, ° F	316° - 360°F	Vapor Density: ☒ Heavier ☐ Lighter Than Air	
Evaporation Rate: ☐ Faster ☒ Slower Than Ether		Percent Volatile: 100%	Solubility in Water: Negligible
Specific Gravity: ☒ Lighter ☐ Heavier Than Water		Weight per Gallon: 6.37	
Appearance and Odor: This product is clear, has little if any color and has a characteristic odor.			

Section X - - DOCUMENTARY INFORMATION

Product Code No.	1103	Issue Date	10/20/80	Prepared By	Paul Pfeifer
Replaces: UCD No.	253	Product Code No.	1103	Issued	12/79
Reviewed By:	R. Patten	Manager, Loss Prevention			
Reviewed By:	Rainer Beck	Director of Occupational Health & Toxicology			
Reviewed By:	Sterling Bunch	Science and Technology Division			

The above information is believed to be correct as of the date hereof. However, no warranty of merchantability, fitness for any use, or any other warranty is expressed or is to be implied regarding the accurancy of these data, the results to be obtained from the use of the material, or the hazards connected with such use. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar, and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume responsibility for the results of its use. This information is furnished on the condition that the person receiving it shall make his own determination as to the suitability of the material for his particular purpose and on the condition that he assume the risk of his use thereof.

TABLE I. Chemical and Physical Requirements and Test Methods

Requirements	Type I	Type II	ASTM Test Methods
		0.765/0.775	
Specific Gravity, 60°F/60°F	0.699 ±0.002	0.770 ±0.005	D1298
Color, Lighter Than	+25	515/511	D156
Viscosity, Centistokes at 0°C (32°F)	0.785 ±0.01		D445
25°C (77°F)		1.17 ±0.05	
37.8°C (100°F)	0.54 ±0.01		
Vapor Pressure at 100°F, psi (Max)	2.0		D323
Gum, Existent, mg/100 ml (Max)	2.0	5.0	D381 1/
Gum, Potential, mg/100 ml (Max)	5.0		D873 2/
Distillation:			D86
Initial Boiling Point °F (Min)		300	
Final Boiling Point °F (Max)		410	
Recovery Percent (Min)		98.5	
Range 5 to 95 Percent Points, °F (Max)	3 3/		
Flash Point, °F (Min)		100	D93
Aniline Point, °F (Min)		145	D611
Bromine Number (Max)		3	D1158 or D1159
Mercaptan Sulphur, Percent Wt (Max) or Doctor Test		0.001 Sweet	D1219 D484, Sec 4(c)
Copper Corrosion (Max)	No. 1	No. 1	D130 4/
Acidity of Distillation Residue		Passing	D1093

1/ Air jet method
2/ 5-hour aging period
3/ Must include temperature of 208°F
4/ Procedure: 212°F (100°C) on less volatile materials

RECD SEP 16 1986

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:
5HR-11/ERS-SPCC

SEP 12 1986

Mr. Jeffrey A. Lindstrom
ATG Loss Control
Sundstrand Aviation Operations
Post Office Box 7002
Rockford, Illinois 61125-7002

Dear Mr Lindstrom:

This will acknowledge receipt of your transmittal of the Incident Report for the August 28, 1986, spill occurrence at your facility.

Please note that the oil spill located at 2421 11th Street, Rockford, Illinois and reported on September 2, 1986, has been recorded.

We would like to take this opportunity to remind you that under the Federal Water Pollution Control Act, Section 311(b)(5) if a spill occurs, the regulations require that it be reported to the Federal Government.

We have enclosed a poster for your convenience, which identifies state, regional and national emergency phone numbers. These numbers may be used on a 24-hour, 7-day per week basis. A call to the National Response Center (800-424-8802) is sufficient to meet the Federal notification requirement.

Your efforts toward maintaining a healthy environment are appreciated.

Sincerely,

Denise Young

Denise Young
Environmental Protection Assistant

Enclosure

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
- ☐ Show to whom and date delivered ..... ____¢
- ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY..... ____¢
(The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO: Illinois Environmental Protection Agency 4302 North Main Street Rockford, IL 61132

4. TYPE OF SERVICE: ☐ REGISTERED ☐ INSURED ☐ CERTIFIED ☐ COD ☐ EXPRESS MAIL — ARTICLE NUMBER

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

5. DATE OF DELIVERY 9/4/86 — POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE: — 7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

☆ GPO: 1982-379-503

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
- ☐ Show to whom and date delivered ..... ____¢
- ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY..... ____¢
(The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO: Illinois Environmental Protection Agency Division of Land Pollution Control 2200 Churchill Rd Springfield, IL 62706

4. TYPE OF SERVICE: ☐ REGISTERED ☐ INSURED ☐ CERTIFIED ☐ COD ☐ EXPRESS MAIL — ARTICLE NUMBER

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

5. DATE OF DELIVERY SEP 8 1986 — POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE: — 7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

☆ GPO: 1982-379-503

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
- ☐ Show to whom and date delivered .....
- ☐ Show to whom, date, and address of delivery ..
2. ☐ RESTRICTED DELIVERY.....
(The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $

3. ARTICLE ADDRESSED TO: Illinois Environmental Protection Agency Division of Land Pollution Control 2200 Churchill Rd Springfield, IL 62706

4. TYPE OF SERVICE: ☐ REGISTERED ☐ INSURED ☐ CERTIFIED ☐ COD ☐ EXPRESS MAIL — ARTICLE NUMBER

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

5. DATE OF DELIVERY 9-3-86 — POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE: — 7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

☆ GPO: 1982-379-503

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
- ☐ Show to whom and date delivered .....
- ☐ Show to whom, date, and address of delivery ..
2. ☐ RESTRICTED DELIVERY.....
(The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $

3. ARTICLE ADDRESSED TO:

4. TYPE OF SERVICE: ☐ REGISTERED ☐ INSURED ☐ CERTIFIED ☐ COD ☐ EXPRESS MAIL — ARTICLE NUMBER

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

5. DATE OF DELIVERY — POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE: — 7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

☆ GPO: 1982-379-503

[redacted]

[redacted]

[redacted]

[redacted]

All Entries MUST be in Ball Point or Typed

PS FORM 3806 July 1983 — RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

Customer Completion (Please Print)		Post Office Completion			
TO	Illinois Environmental Protection Agency Director of Land Pollution Control 2200 Churchill Road Springfield, Il. 62706	Customer must declare Full value $		Reg. Fee $ 3.60	Special Delivery $
FROM	SUNDSTRAND AVIATION 4747 HARRISON AVE. P.O. BOX 7002 ROCKFORD, IL 61125	With Postal Insurance / Without Postal Insurance $25,000 Domestic Ins. Limit		Handling Charge $	Return Receipt $ .70
ZIP CODE	61125	Intl ☐	Received by M. Willard	Postage $ .22	Restricted Delivery $

REGISTERED NO. R397-024-733

POSTMARK OF ROCKFORD, IL SEP 2 1986 USPO

All Entries MUST be in Ball Point or Typed

PS FORM 3806 July 1983 — RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

Customer Completion (Please Print)		Post Office Completion			
TO	Illinois Environmental Protection Agency Director of Land Pollution Control 2200 Churchill Road Springfield, Il. 62706	Customer must declare Full value $		Reg. Fee $ 3.60	Special Delivery $
FROM	SUNDSTRAND AVIATION 4747 HARRISON AVE. P.O. BOX 7002 ROCKFORD, IL 61125	With Postal Insurance / Without Postal Insurance $25,000 Domestic Ins. Limit		Handling Charge $	Return Receipt $ .70
ZIP CODE	61125	Intl ☐	Received by M. Willard	Postage $ .22	Restricted Delivery $

REGISTERED NO. R397-024-731

POSTMARK OF ROCKFORD, IL SEP 2 1986 USPO

All Entries MUST be in Ball Point or Typed

PS FORM 3806 July 1983 — RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

Customer Completion (Please Print)		Post Office Completion			
TO	Ms. Freda Bailey-Murray Rockford Fire Department 204 S. 1st Street Rockford, Il. 61104	Customer must declare Full value $		Reg. Fee $ 3.60	Special Delivery $
FROM	SUNDSTRAND AVIATION 4747 HARRISON AVE. P.O. BOX 7002 ROCKFORD, IL 61125	With Postal Insurance / Without Postal Insurance $25,000 Domestic Ins. Limit		Handling Charge $	Return Receipt $ .70
ZIP CODE	61104	Intl ☐	Received by M. Willard	Postage $ .22	Restricted Delivery $

REGISTERED NO. R397-024-732

POSTMARK OF ROCKFORD, IL SEP 2 1986 USPO

All Entries MUST be in Ball Point or Typed

PS FORM 3806 July 1983 — RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

Customer Completion (Please Print)		Post Office Completion			
TO	Illinois Environmental Protection Agency Director of Land Pollution Control 2200 Churchill Road Springfield, Il. 62706	Customer must declare Full value $		Reg. Fee $ 3.60	Special Delivery $
FROM	SUNDSTRAND AVIATION 4747 HARRISON AVE. P.O. BOX 7002 ROCKFORD, IL 61125	With Postal Insurance / Without Postal Insurance $25,000 Domestic Ins. Limit		Handling Charge $	Return Receipt $ .70
ZIP CODE	61132	Intl ☐	Received by M. Willard	Postage $ .22	Restricted Delivery $

REGISTERED NO. R397-024-731

POSTMARK OF ROCKFORD, IL SEP 2 1986 USPO

[redacted]

REGISTERED NO. 215 842 119

POSTMARK OF REG. DIV. ROCKFORD AUG 29 1986 USPO

Post Office Completion

Reg. Fee	$ 3.60	Special Delivery	$
Handling Charge	$ ~~3.60~~	Return Receipt	$ .70
Postage	$ .22	Restricted Delivery	$
Received by		☐ Intl	

All Entries MUST be in Ball Point or Typed

Customer Completion (Please Print)

Customer must declare Full value $

☐ With Postal Insurance ☐ Without Postal Insurance $25,000 Domestic Ins. Limit

FROM
SUNDSTRAND AVIATION
~~4747~~ HARRISON AVE.
P.O. BOX 7002
ROCKFORD, IL ~~61125~~

ZIP CODE

TO
Regional Administrator
U.S. Environmental protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois

ZIP CODE 60604

PS FORM 3806 July 1983 RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

RETURN RECEIPT

PS Form 3811, July 1982

● SENDER: Complete Items 1, 2, 3, and 4. Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
☐ Show to whom and date delivered ..... ___ ¢
☐ Show to whom, date, and address of delivery .. ___ ¢
2. ☐ RESTRICTED DELIVERY ..... ___ ¢
(The restricted delivery fee is charged in addition to the return receipt fee.)
TOTAL ¢ ___

3. ARTICLE ADDRESSED TO:
Regional Administrator
U.S. Environmental protection Agency
Region V
230 S. Dearborn Street Chicago, Ill 60604

4. TYPE OF SERVICE:
☒ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER

(Always obtain signature of addressee or agent)

I have received the article described above.

SIGNATURE ☐ Addressee ☐ Authorized agent

5. DATE OF DELIVERY 9/2/86

6. ADDRESSEE'S ADDRESS (Only if requested)

POSTMARK (may be on reverse side)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

* GPO: 1983-378-865

Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-3637

RECD DEC 6 1986

December 1, 1986

Jeffery A. Lindstrom
Sundstrand Aviation Operations
2421 11th Street
Rockford, Illinois 61101

Dear Mr. Lindstrom:

The attached information is being forwarded to your attention, as documentation of an environmental incident involving your company on August 28, 1986. As a result of this incident, waste product and/or contaminated materials were generated during the remedial phase of the incident requiring removal pursuant to: Title 35: Environmental Protection, Subtitle G: Waste Disposal. To verify proper disposal and compliance with the Illinois Environmental Protection Act, please submit copies of the appropriate signed manifests documenting removal operations to:

Illinois Environmental Protection Agency
Office of Emergency Management #29
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Your cooperation with this request will be appreciated. Should you have any questions, please contact Chuck Brutlag at 217/782-3637.

Sincerely,

James Patrick O'Brien, Manager
Office of Emergency Management

JOB:CWB:bls/0821g,2

cc: Incident Log
File
Dennis Connor, Rockford

jnb

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
EMERGENCY RESPONSE UNIT

INCIDENT CONTROL SHEET

NOTIFICATION INFORMATION

DATE: 8/28/86	TIME: 10:30 am	DUTY OFFICER: Bruflac
TYPE OF INCIDENT: Spill		REFERENCE CITY: Rockford
COUNTY: Winnebago	LOCATION: 2421 11th St.	
CALLER: Jeff Lindstrom		RELAY FROM:
CALL BACK NUMBER: 815/226-3241	CONTACT PERSON:	

GENERAL INFORMATION

MATERIAL INVOLVED: Naptha PHYSICAL STATE: Liquid

AMT. RELEASED: 50	RATE OF DISCHARGE:	AMT. RECOVERED: 0
CONTAINER AND SIZE: Tank Truck		
LIABLE PARTY: Sundstrand SIC 3561	CONTACT PERSON:	
ON SCENE COORDINATOR:	CONTACT NUMBER:	

NATURE OF EMERGENCY

FIRE ☐ EXPLOSION ☐ HUMAN HAZARDS ☐ ENV. PROBLEMS: WATER ☐ AIR ☐ LAND ☐ PWS ☐

ACTION TAKEN: Spill not reported to OEM - log based on FOS Report

ASSISTANCE NEEDED, RECOMMENDATIONS, AND COMMENTS:

~~Close File 9/8/86~~:

NOTIFICATION: ESDA ☐ SFM ☐ CONSERVATION ☐ MINES & MINERALS ☐ PUBLIC HEALTH ☐ ISP ☐ MSD ☐

COOK CO DEC ☐ USEPA ☐ USCG ☐ USFW ☐ ORSANCO ☐

LOCAL FIRE DEPT ☐ LOCAL POLICE DEPT ☐ BORDERING STATE(S)_____ OTHER

IEPA NOTIFICATION

IEPA DAPC ☐ DWPC ☒ DLPC ☐ DPWS ☐ ENF ☐ MPC ☐ DLS ☐ ERU ☐ DIR OFF ☐

NAME: Dennis Conner	NAME:
NAME:	NAME:
NAME:	NAME:
NAME:	NAME:

FOLLOW UP INVESTIGATION YES ☐ NO ☒ NAME OF INVESTIGATOR:

WRITTEN REPORT NEEDED YES ☐ NO ☐ DATE REPORT REC'D:

IEPA/OTHER PERSONNEL ON SCENE

Sundstrand Aviation Operations
unit of Sundstrand Corporation

4747 HARRISON AVENUE. P.O. BOX 7002 • ROCKFORD. ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 257-440

December 8, 1986
EPA86-047

Illinois Environmental Protection Agency
Office of Emergency Management #29
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Dear Sir:

In response to an inquiry from Mr. James O'Brien to Mr. Jeffery Lindstrom of this office dated December 1, 1986 in reference to an environmental incident involving our company on August ~~18~~ 28, 1986 please find the following.

We have yet to dispose of the two fifty-five gallon drums of waste recovered from this incident. They are being stored on site in our Hazardous Waste Storage area pending disposition.

Our facility is a permitted Hazardous Waste Storage Facility, permit number 2010300048.

If you have any questions or require additional information please feel free to call myself at (815) 226-6934.

Sincerely,

Al Munn
Supervisor ATG Loss Control

AM/jw

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
   - ☐ Show to whom and date delivered ..... ____¢
   - ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY..... ____¢
   (The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
Illinois Environmental Protection Agency
Director of Land Pollution Control
2200 Churchill Rd.
Springfield, IL 62706

4. TYPE OF SERVICE:
☒ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER
R397 024634

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent
Illinois Environmental Protection Agcy.
2200 Churchill Road
Springfield, Illinois 62706

5. DATE OF DELIVERY
AUG 27 1986

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-503

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
   - ☐ Show to whom and date delivered ..... ____¢
   - ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY..... ____¢
   (The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
Mr. Greta Bailey-Murray
Rockford Fire Dept.
204 S. 1st St.
Rockford, IL 61104

4. TYPE OF SERVICE:
☒ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER
R397 024632

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

5. DATE OF DELIVERY
8-27-86

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-503

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
   - ☐ Show to whom and date delivered ..... ____¢
   - ☐ Show to whom, date, and address of delivery .. ____¢
2. ☐ RESTRICTED DELIVERY..... ____¢
   (The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $____

3. ARTICLE ADDRESSED TO:
Regional Administrator
U.S. Environmental Prot. Agency
Region V. 230 S. Dearborn St.
Chicago, IL 60604

4. TYPE OF SERVICE:
☒ REGISTERED ☐ INSURED
☐ CERTIFIED ☐ COD
☐ EXPRESS MAIL

ARTICLE NUMBER
R397 024633

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

5. DATE OF DELIVERY
8-27-86

POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS (Only if requested)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-503

REGISTERED NO. R397024634

POSTMARK OF ROCKFORD, IL AUG 26 1986 USPS

All Entries MUST be in Ball Point or Typed

Post Office Completion

Reg. Fee $ 3.60	Special Delivery $		
Handling Charge $	Return Receipt $ .70		
Postage $ .22	Restricted Delivery $		
Received by Horton	☐ Intl		

Customer must declare Full value $

☐ With Postal Insurance ☐ Without Postal Insurance

$25,000 Domestic Ins. Limit

Customer Completion (Please Print)

FROM
SUNDSTRAND AVIATION
4747 HARRISON AVE.
P.O. BOX 7002
ROCKFORD, IL 61125
ZIP CODE

TO
Ill. Environmental Protection Agency
Director of Land Pollution Control
2200 Churchill Road
Springfield, IL
ZIP CODE 62706

PS FORM 3806 July 1983 RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

Ed Thomas 8-21

RETURN RECEIPT

PS Form 3811, July 1982

● SENDER: Complete items 1, 2, 3, and 4. Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. ☐ The following service is requested (check one).
   ☐ Show to whom and date delivered ..... ___ ¢
   ☐ Show to whom, date, and address of delivery ..... ___ ¢
2. ☐ RESTRICTED DELIVERY ..... ___ ¢
   (The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL ¢ ___

3. ARTICLE ADDRESSED TO: Illinois Environmental Protection Agency 4302 N. Main St. Rockford, IL 61132

4. TYPE OF SERVICE:
   ☑ REGISTERED ☐ INSURED
   ☐ CERTIFIED ☐ COD
   ☐ EXPRESS MAIL

ARTICLE NUMBER R397024631

5. DATE OF DELIVERY

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

6. ADDRESSEE'S ADDRESS (Only if requested) 8/28/86

POSTMARK (may be on reverse side)

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

GPO: 1983-379-503

[redacted]

All Entries MUST be in Ball Point or Typed

Customer Completion (Please Print)			Post Office Completion			
TO	FROM		Customer must declare Full value $	Received by	Reg. Fee $3.60	Special Delivery $
Illinois Environmental Protection Agency	SUNDSTRAND AVIATION		☐ With Postal Insurance ☐ Without Postal Insurance $25,000 Domestic Ins. Limit	Postage $ .22	Handling Charge $	Return Receipt $ .70
2200 Churchill Road	4747 HARRISON AVE.			Intl ☐		Restricted Delivery $
Springfield, IL	P.O. BOX 7002					
ZIP CODE 62794	ROCKFORD, IL 61125	ZIP CODE				

REGISTERED NO. R397 024 633

POSTMARK OF ROCKFORD, IL AUG 26 1986 USPS

PS FORM 3806 July 1983 RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

All Entries MUST be in Ball Point or Typed

Customer Completion (Please Print)		Post Office Completion		
FROM	SUNDSTRAND AVIATION	Customer must declare Full value $	Reg. Fee $3.60	Special Delivery $
	4747 HARRISON AVE.	☐ With Postal Insurance ☐ Without Postal Insurance $25,000 Domestic Ins. Limit	Handling Charge $	Return Receipt $ .70
	P.O. BOX 7002		Postage $ .22	Restricted Delivery $
ZIP CODE	ROCKFORD, IL 61125		Received by Horton	Intl ☐
TO	Illinois Environmental Protection Agency			
	4302 N. Main St.			
	P.O. Box 2903			
ZIP CODE 61132	Rockford IL			

REGISTERED NO. R397 024 631

POSTMARK OF ROCKFORD, IL AUG 26 1986 USPS

PS FORM 3806 July 1983 RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

All Entries MUST be in Ball Point or Typed

Customer Completion (Please Print)		Post Office Completion		
FROM	SUNDSTRAND AVIATION	Customer must declare Full value $	Reg. Fee $3.60	Special Delivery $
	4747 HARRISON AVE.	☐ With Postal Insurance ☐ Without Postal Insurance $25,000 Domestic Ins. Limit	Handling Charge $	Return Receipt $ .70
	P.O. BOX 7002		Postage $ .22	Restricted Delivery $
ZIP CODE	ROCKFORD, IL 61125		Received by Horton	Intl ☐
TO	Ms. Freda Briley-Murray			
	Rockford Air Dist.			
	204 S. 1st Street			
ZIP CODE 61104	Rockford IL			

REGISTERED NO. R397 024 632

POSTMARK OF ROCKFORD, IL AUG 26 1986 USPS

PS FORM 3806 July 1983 RECEIPT FOR REGISTERED MAIL (Customer Copy)

(See Information on Reverse)

[redacted]

[redacted]

Sundstrand Aviation Operations

Advanced Technology Group
Sundstrand Corporation

4747 HARRISON AVENUE P O BOX 7002 • ROCKFORD ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 25-7440

April 23, 1987
EPA87-020

Regional Administrator
U.S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois 60604

Reference: Sundstrand Aviation Operations - ILD010219665
2010300048

Dear Sir:

This letter contains report of a fuel spill which occurred at our Plant #1 located at 2421 11th Street, Rockford, Illinois on Thursday, April 23, 1987 at 11:20 A.M.

Owner/Operator:	Sundstrand Aviation Operations 4747 Harrison Avenue Rockford, Illinois 61101 (815) 226-6000
Location of Spill:	Sundstrand Aviation Operations 2421 11th Street Rockford, Illinois 61101 (815) 226-6000 USEPA #ILD010219665 IEPA #2010300048
Time and Date:	Spill discovered at 11:20 A.M. on Thursday, April 23, 1987. Spill was stopped immediately.
Type of Material:	JP4 Jet Fuel
Volume of Spill:	Approximately 50 gallons

Cause of Spill:	A bypass valve was closed on the overflow pipe between two waste tanks. An inside run tank was drained, filling the waste tank. This caused a back up through the vent pipe and out onto the blacktop drive. Approximately 5 to 6 gallons entered a nearby sanitary sewer. The rest was contained and recovered. A portion of the fuel which entered the sanitary sewer was recovered by pumping the flow of wastewater back.
Measures taken to prevent reoccurrence:	A locking device will be installed locking the valve in the open position. A sign will be installed reminding individuals to keep valve open. The sanitary sewer cover will be sealed.
Recovered Material:	Two (2) 55 gallon drums of JP4 contaminated oil dry. Liquid recovered disposed of in waste JP4 tank.
Risk Assessment:	No injuries resulted from spill. A portion of the JP4 was recovered from the sanitary sewer.

Our contingency plan was used upon discovery of the spill. The Rockford Fire Department, the Illinois E.P.A. and the Sanitary District of Rockford were notified of the spill.

If you have any questions please contact ATG Loss Control at (815) 226-6934.

Sincerely,

Al Munn
Supervisor ATG Loss Control

cc: Illinois EPA
Director of Land Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

Rockford Fire Department
204 S. 1st Street
Rockford, Illinois
Attn: Inspector Bailey-Murray

Illinois EPA
4302 N. Main Street
P. O. Box 2903
Rockford, Illinois
Attn: Chuck Corley

Sanitary District of Rockford
3333 Kishwaukee Street
P. O. Box 918
Rockford, Illinois 61105
Attn: Bob Steidel

Corporate Loss Control
Sundstrand Corporation

Corporate Legal Department
Sundstrand Corporation

SANITARY DISTRICT OF ROCKFORD

ACCIDENTAL DISCHARGE REPORTING FORM

This form must be completed and returned to the District Director within fifteen (15) days following the report of an accidental or deliberate discharge to the sanitary sewer. Completion of this form is a requirement of Ordinance 361 (Article IV, Section 10C) and does not relieve the User of any liabilities due to the accidental discharge. Prompt and accurate reporting does reflect that the User is attempting to address the problem.

Company Name: Sundstrand Aviation

Address: 2421 11th Street Phone: 226-6000

Person completing this form: Al Munn

Title: Supervisor ATG Loss Control

Time and Date accidental discharge started and stopped:

Started 11:20 (am)/pm on 4/23/87 (date) and

stopped 11:20 (am)/pm on 4/23/87 (date).

Type of material spilled: JP4

Volume of spill (give units): Approximately 50 gallons

Chemical analysis of a representative sample of the spilled material. Show concentration of all compounds in the spilled material. If a sample of the spilled material is not available, list all known contents present in the discharged material.

COMPOUND	CONCENTRATION (mg/l)
JP4	100%

Location of accidental discharge:

Plant process area _____ **Material Storage area** _____

In-plant transfer area X **Shipping/Receiving area** _____

Other (specify) South Fire Lane

Is spill containment present in the area where the accidental discharge occurred?

Yes _____ **No** X

Is spill containment present in other areas within the plant?

Yes X **No** ____

Describe the cause of the reported discharge:

Overflow valve between two waste tanks was closed. Fuel being drained from inside run tank filled waste tank forcing fuel up vent pipe.

Describe what actions were taken at the time to control the spill (eg. sealed floor drain, use of sorbants or foams, etc.):

1. Flow of fuel shut down
2. Absorbent spread around storm sewer and over spill

Did the spill receive any type of treatment?

Yes _____ **No** X

If yes, please describe:

Was any part of the spill contained and prevented from discharge to the sanitary sewer? Yes X **No** ____

If yes, please describe how that waste was disposed.

Solid is drummed and will be disposed of. Liquid will be put into waste tank. Approximately 45 gallons was contained.

Describe fully what measures will be taken to prevent similar accidents in the future.

1. The bypass valve will be locked in the open position.
2. A sign posted informing people valve to remain open.
3. Sanitary manhole cover will be sealed.

Anticipated time schedule in which the above-stated measures will be completed.

These steps should be completed within one month.

This accidental discharge was reported to the District on 4/23/87 **(date) at** 12:12 **am/(pm) by** Al Munn Al Munn **(name),** Supv. ATG Loss Control **(title).**

RS/ra

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF 5HR-11/ERS-5PCC

MAY 20 1987

Mr. Al Munn
Supervisor, ATG Loss Control
Sundstrand Aviation Operations
4747 Harrison Avenue
Rockford, Illinois 61101

Dear Mr. Munn:

This will acknowledge receipt of your transmittal of the Incident Report for the April 23, 1987, spill occurrence at your facility.

Please note that the fuel spill located 2421 11th Street which occurred at 11:20 a.m. and reported on April 23, 1987, has been recorded.

We would like to take this opportunity to remind you that under the Federal Water Pollution Control Act, Section 311(b)(5) if a spill occurs, the regulations require that it be reported to the Federal Government.

We have enclosed a poster for your convenience, which identifies State, regional and national emergency phone numbers. These numbers may be used on a 24-hour, 7-day per week basis. A call to the National Response Center (800-424-8802) is sufficient to meet the Federal notification requirement.

Your efforts toward maintaining a healthy environment are appreciated.

Sincerely,

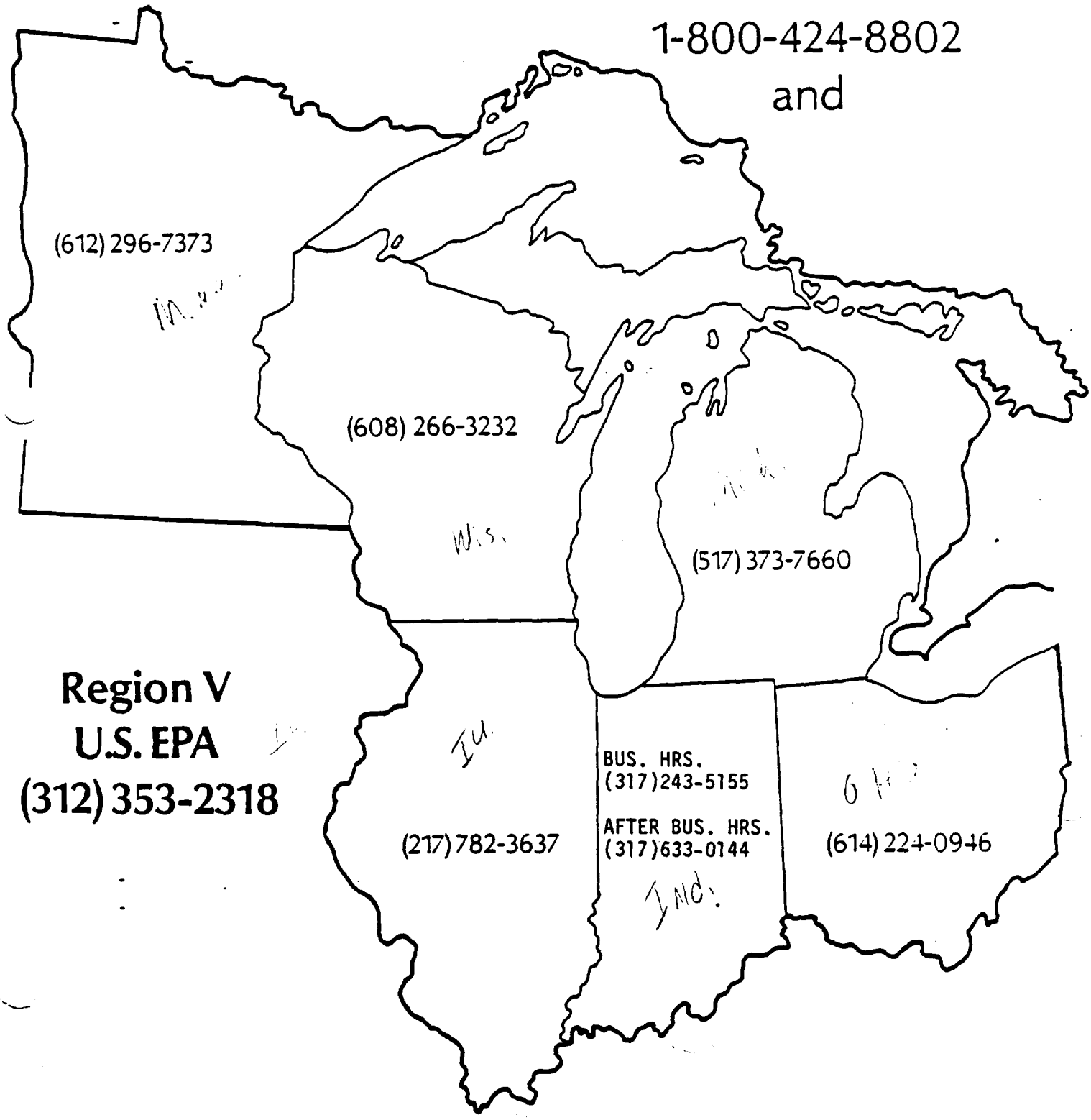
Denise Young

Denise Young, Environmental Protection Assistant
Emergency Response Section

Enclosure

REPORT OIL OR CHEMICAL SPILLS

to the
National Response Center
1-800-424-8802
and



Region V
U.S. EPA
(312) 353-2318

P 235 134 062

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Regional Administrator
U.S. Environmental Protection Agency
Street and No. 230 S. Dearborn Mail
P.O. State and ZIP Code Chicago, Illinois 60604

Postage	22
Certified Fee	75
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	.70
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 1.67
Postmark or Date	APR 27 1987

PS Form 3800, June 1985 * U.S.G.P.O. 1985-480-794

9-466 mm 8.0

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery.

3. Article Addressed to:
Regional Administrator
U.S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, Illinois 60604

4. Article Number
P235 134 062

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
4-29-87

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

Sundstrand Aviation Operations
Advanced Technology Group
Sundstrand Corporation

4747 HARRISON AVENUE. P.O. BOX 7002 • ROCKFORD, ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 25-7440

May 24, 1989
EPA89-027

Regional Administrator
U. S. Environmental Protection Agency
Region V
230 S. Dearborn Street
Chicago, IL 60604

Reference: Sundstrand Aviation Operations - ILD010219665
2010300048

National Response Center #6784
Illinois ESDA #890727

Dear Sir:

This letter contains the report of a spill of mineral spirits which occurred at our Plant #1, located at 2421 11th Street, Rockford, Illinois on May 4, 1989.

Owner/Operator: Sundstrand Aviation Operations
4747 Harrison Avenue
Rockford, IL 61101
(815) 226-6000

Location of Spill: Sundstrand Aviation Operations
2421 11th Street
Rockford, IL 61101
(815) 226-6000

USEPA #ILD010219665
IEPA #2010300048

Time and Date: Spill discovered at approximately 12:35 p.m. on Thursday, May 4, 1989.

Type of Material: Mineral Spirits 7024

Volume of Spill*: Approximately 1000 gallons

Cause of Spill: Sump pump failed, allowing sump tank to fill. The sump tank overflowed into a concrete retaining area, which then proceeded to fill. The retaining area had a dirt and gravel floor.

* Majority of material contained and recovered.

Measures Taken to Prevent Recurrence: The sump, sump tank and retaining area are being redesigned and rebuilt to provide secondary containment so as not to allow escape of mineral spirits to the environment.

Recovered Material: The spilled material was recovered through pumping out the tank and retaining area. This was put into our waste tank and will be disposed of in accordance with RCRA requirements. To date four 55 gallon drums of contaminated dirt have been collected. This waste will be analyzed and disposed of in accordance with EPA rules and regulations.

Risk Assessment: No injuries resulted from this spill. The majority of liquid was recovered and contaminated dirt removed.

Our contingency plan was used upon discovery of the spill. The National Response Center, Illinois Emergency Services and Disaster Agency (ESDA) and Winnebago County ESDA were notified of the spill.

If you have any questions please contact me at (815) 226-6934.

Sincerely,

Al Munn
Loss Control Manager

AM:cw

Copy: Illinois EPA
Director of Land Pollution Control
2200 Churchill Road
Springfield, IL 62706

Rockford Fire Department
204 S. First Street
Rockford, IL
Attn: Inspector Ed Whittingham

Linda Aylward
Corporate Legal

Mark Chiado
Corporate Loss Control

Sundstrand Advanced Technology Group
Sundstrand Corporation

4747 HARRISON AVENUE P O BOX 7002 • ROCKFORD ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 25-7440

October 17, 1989
EPA89-054

Mr. Steve Colantino
Illinois Environmental Protection Agency
Division of Land Pollution Control
Remedial Project Management Section
Leaking Underground Storage Tank Unit
2200 Churchill Road
P. O. Box 19276
Springfield, IL 62794

REFERENCE: Winnebago/Rockford - 891750
Sundstrand Corporation
2421 11th Street
Rockford, Illinois

Dear Mr. Colantino:

In the following paragraphs please find our response to your letter dated September 20, 1989 in which you request additional information on our reported release of jet fuel on or before September 11, 1989.

1. The completed pink copy of the contingency plan is enclosed.

2. On Sunday, September 3, 1989, Harding Lawson Associates was drilling a monitoring well hole adjacent to the tank farm and associated pipelines in the South Alley. When the drill rig auger struck what was believed to be the top of the pipeline trench liner, drilling stopped and the hole was relocated. Our tank farm and pipeline system was installed in 1988 using double wall fiberglass tanks with monitoring devices in the interstitial space. The pipes are fiberglass enclosed in a liner to form secondary containment. This secondary containment has numerous monitoring wells with alarms for the detection of free product.

   On Tuesday, September 5, 1989, we notified the pipeline installation company of the liner puncture to arrange repair. Thursday, September 7, 1989 we began transferring JP4 from our tank #4. The tank level fell, but no fuel arrived at the destination point. We shut the pumps down, locked them out, and began to investigate.

   A determination was made that the secondary containment held 1179 gallons. It was believed at that time that the secondary containment was intact and that no release to the environment had occurred.

   International Piping Systems (IPS) was notified on 9/8/89 to mobilize a crew to begin excavation and repair of the liner. On Monday, 9/11/89 IPS arrived and commenced work. It was then, after excavation, that we discovered both the top and bottom of the liner were punctured, as well as two JP4 fuel lines. At that time notification was made to the National Response Center, IEPA, and the local ESDA.

The site was excavated. Contaminated soil and pea gravel was removed from around and below the liner. The pipes and liner were repaired. A flushing program then took place to purge the secondary containment of JP4.

3. Water was introduced into the secondary containment to flush out any remaining JP4. This liquid was pumped from the liner to a waste tank for disposal. We feel that greater than 95% of the JP4 was recovered from the liner.

4. Not applicable to this situation as pipe lines were broken and loss date and time is known.

5. Sundstrand observed tank tightness tests conducted for line and tank integrity by the contractor. No documentation was forward to Sundstrand.

6. We believe the items requested in this request are not applicable to this particular incident. We are, however, under separate cover, submitting a proposed schedule and methodology for soil sampling and analysis and a hydrogeologic study to Mr. Steve Colantino of the Illinois EPA as it relates to a previously reported incident.

7. The following is a list of contractors whose services have been or will be secured to perform the remediation.

International Piping Systems
9329 Bernice Ave.
P. O. Box 2100
Shillar Park, IL 60176

Rockford Blacktop
600 Boylston St.
Loves Park, IL 61130

TMP Transport
3210 East 211th St.
Lynwood, IL 60411

Chemical Waste Management
Adams Center Landfill
4636 Adams Center Road
Fort Wayne, IN 46806

If you have any questions or require additional information, please feel free to contact me at (815) 226-6934.

Sincerely,

Al Munn
Loss Control Manager

AM:cw
attachments

cc: Mark Chiado, Sundstrand
Linda Aylward, Sundstrand
Daryl Streed, IEPA
Ken Burch, USEPA

Complete this form.

Contingency Plan
Leaking Underground Storage Tank Problems

City Rockford Incident # 891750
Site Name Sundstrand ATG
Address 2421 11th Street

Site Phone (815) 226-6000

Person representing the site with authority to approve remediation expenditures in an emergency
Al Munn
Phone (815) 226-6000
After-hours Phone (815) 226-6000

Contractor Hired for Tank Removal N/A
Phone
After-hours Phone

Contractor Available for Emergency Response N/A
Phone
After-hours Phone

In case of Additional Petroleum Product spillage or discovery of products or vapors in the Sewers, Streams, and/or Buildings *IMMEDIATELY* Notify all the Following:

Local Fire Department Rockford Fire Dept. Phone (815) 964-3321

Local Police Department Rockford Police Dept. Phone (815) 987-5800

Sewer Authority Sanitary District of Rockford Phone (815) 397-9700
After-Hours Phone (815) 397-9422

Illinois Emergency Services and Disaster Agency and ask for the IEPA Duty Officer Phone 800/782-7860

Confirm that the emergency contractor is available and willing to respond to this site. Then post the original in a prominent place for your employees and send the carbon to:

IEPA-ERU #29
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Illinois Environmental Protection Agency — Emergency Response IEPA-ERU
Phone 217/782-3637

Beling Consultants, Inc.

March 15, 1990

Mr. Al Munn
Sundstrand Aviation Operations
4747 Harrison Avenue
P.O. Box 7002
Rockford, Illinois 61125-7002

SUBJECT: FLEXIBLE MEMBRANE LINER REPAIR
P.O. #B2U8106-26M

Dear Mr. Munn:

Presented below is a statement concerning the repair work performed on the flexible membrane liner located at Sundstrand Aviation Plant #1 South Alley. This statement is based on a review of documentation from Sundstrand Aviation. The documents submitted for review included the following: office memos, contractors correspondence, site plans and photographs.

International Piping Systems, Inc. was contracted to repair the secondary containment system at Sundstrand's Plant #1, South Alley. The repair area is approximately five (5) feet south of tank 12 fill pipe. IPS, Inc. was selected to perform the repair work. IPS, Inc. was the original installer and is an authorized installer for the MPC flexible liner containment. IPS, Inc. is also registered with Illinois Office of the State Fire Marshal to repair and install underground storage tank systems.

The repair of the liner was performed September 11, 1989. A temporary patch was installed on the bottom of the liner. Prior to installing a permanent vulcanized patch, the excavation area was cleaned. Piping repairs were performed and the repairs were leak tested with air at 100 psi for twenty-four (24) hours. On September 14, 1989 the top section of the overliner was sealed using a vulcanized patch. Prior to backfilling and resurfacing, photographs were taken of the repairs that were made.

The following personnel were on-site during the repair activities: Al Hufford of Sundstrand, and John E. Howard of IPS, Inc.

Based upon the above information, this repair work was performed in accordance with all known State of Illinois requirements for such work.

Sincerely,

BELING CONSULTANTS, INC.

Timothy C. McVey/cld

Timothy C. McVey
Project Manager

Bruce W. Peek, P.E.
Vice President
IL Reg. 044698

cld

Illinois Environmental Protection Agency · P.O. Box 19276, Springfield, IL 62794-9276

217/782-6760

Refer to: Winnebago/Rockford -- 891750
Sundstrand Corp.
2421 11th Street
Compliance File

Certified Mail
Return Receipt

Notice of Release

September 20, 1989

Sundstrand Corp.
Attn: Al Munn
P.O. Box 7003
Rockford, Illinois 61125-7003

Dear Mr. Munn:

On or before September 11, 1989, a release of jet fuel occurred from an underground storage tank system(s) at 2421 11th Street. The purpose of this notice is to inform you of your required response under 40 CFR Part 280 -- Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks.

Within 15 days of the date of this letter you must submit to this Agency:

1. The completed pink copy of the contingency plan.

2. A report which describes all action taken initially to control the situation and reduce the hazards on-site. This report must include the following:

   a. Information concerning the removal of as much jet fuel from the tank(s) as necessary to prevent further release into the environment.

   b. Information concerning visual inspections of any above ground release or any exposed below ground release.

   c. Information concerning efforts to prevent the released contaminant from migrating further into surrounding soils and groundwater.

d. Information concerning the monitoring of fire and safety hazards, and steps that were taken to reduce those hazards posed by vapors or free product which have entered into subsurface structures such as sewers or basements.

e. Information concerning the safety precautions taken to control hazards posed by the excavation or exposure of contaminated soils.

3. A recovery plan for the removal of free product if applicable.

4. A summary of inventory losses for the year prior to the discovery of the release.

5. The results of any tank and line integrity testing performed for the year prior to the release.

6. An outline describing the steps to be taken to determine the scope of the contamination and a timetable for those steps. This outline must include the following:

   a. A proposed schedule and methodology for soil sampling and analysis. Sampling points must be of sufficient number to locate the boundaries of the plume of contamination both vertically and horizontally. Include a site map indicating sampling points and depths.

   b. A proposed schedule and methodology for the initiation of a hydrogeologic study to determine the effect, if any, of the release on the local groundwater supply.

7. A written notice listing contractors whose services have been secured to perform the analysis and cleanup.

With the exception of the contingency plan, which is to be submitted to the address indicated on the form, submit the above information to:

Illinois Environmental Protection Agency
Division of Land Pollution Control
Remedial Project Management Section
Leaking Underground Storage Tank Unit
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Include the site number and facility name referenced at the top of page one with any correspondence concerning this matter. All correspondence should be submitted in duplicate.

Should you have any questions or require further assistance, do not hesitate to contact Daryl Streed at 815/987-7404.

Sincerely,

Stephen A. Colantino by AMD

Stephen A. Colantino
LUST Program Manager
Leaking Underground Storage Tank Unit
Remedial Project Management Section
Division of Land Pollution Control

SAC:AMD:rd3309k/4-6

cc: Gary King -- Enforcement
Ken Burch -- USEPA
Division File
Daryl Streed -- Rockford

INTERNATIONAL PIPING SYSTEMS, INC.

MECHANICAL CONTRACTORS

9329 BERNICE AVENUE • BOX 2100 • SCHILLER PARK, ILLINOIS 60176-0100

312/671-7725

January 9, 1990

Mr. Alan Hufford (581-6)
Sundstrand Aviations Operations
4747 Harrison Street
Rockford, Illinois 61125

Re: Sundstrand Aviation
Pressure Tests Preformed
PO #B-2U1432-28M.

Dear Alan:

In response to our phone conversation on 12/5/89, I am attempting to explain the test procedure used on plant number one emergency repair job.

On September 11, 1989, we were called in to test the underground fuel lines located in the south alley of Plant #1. This was done to determine any possible leaks created because of drilling in the area. We found that two fuel lines were leaking into the secondary containment system.

We then excavated the area and repaired the damaged lines. After we made repairs, we retested all of the lines in the secondary containment system. We tested all these lines with 100# of air pressure. Each line was held under pressure for a 24 hour period and checked by Sundstrand personnel, prior to, during and after.

It was determined on the 14th of September, 1989, that all fuel lines were secure of leaks and the secondary containment system was closed up and backfilled. We then repaired the blacktop and restored the area to its' original condition, with the monitoring system back in service.

I hope this meets with your approval. If there are any further questions, please feel free to call me.

Sincerely,

John E. Howard

John E. Howard
Project Manager

JH:bjs/0109

cc: R. Lempa

Illinois Environmental Protection Agency
2200 Churchill Road
P.O. Box 19276
Springfield, IL 62794-9276

24

Fold at line over top of envelope to the right

CERTIFIED

P 115 237 195

MAIL

SPRINGFIELD SEP 19'89 ILL.

6104510

$2.20

904-6

Sundstrand Corp.
Attn: Al Munn
P.O. Box 7003
Rockford, Illinois 61125-7003

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Illinois Environmental Protection Agency
200 Churchill Road
P.O. Box 19276
Springfield, IL 62794

4. Article Number
P116 556 141

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X Illinois Environmental Protection Agcy.
200 Churchill Rd. - P.O. Box 19276
Springfield, Illinois 62794-9276

6. Signature — Agent
X

7. Date of Delivery
OCT 20 1989
OCT 20 1989

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

P 116 556 141

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Illinois Environmental Protection Agency
Street and No. 200 Churchill Road
P.O., State and ZIP Code Springfield, IL 62794

Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	.90
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$ 2.00
Postmark or Date	OCT 18 1989

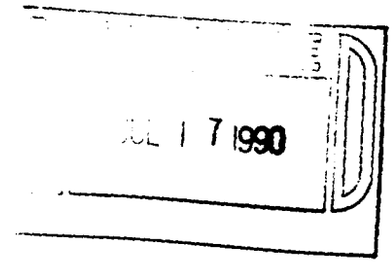
PS Form 3800, June 1985

Sundstrand Advanced Technology Group

Sundstrand Corporation

4747 HARRISON AVENUE, P.O. BOX 7002 • ROCKFORD, ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 25-7440

July 14, 1990
EPA90-074



Illinois Environmental Protection Agency
Director of Land Pollution Control
2200 Churchill Road
Springfield, IL 62706

REFERENCE: Winnebago/Rockford - 901617
Sundstrand ATG
4747 Harrison Avenue
Rockford, IL
Compliance File

Dear Sir:

Following is our response to your letter dated June 28, 1990 in which you request additional information on our reported release (6/18/90) of stoddard solvent and waste water & oil.

1. The completed pink copy of the contingency plan is enclosed.

2. a) Stoddard solvent and waste water & oil were removed from both underground storage tanks; and the tanks were taken out of service immediately upon discovery of the leak.

   b) Both tanks were below grade and covered with blacktop. No visual above-ground release would have been visible The tanks have yet to be excavated, so below-ground contamination has yet to be confirmed. (See response number 6.)

   c) Source of suspected contamination was eliminated upon discovery,

   d) Not applicable.

   e) Contaminated soils, if any, will be excavated and placed into covered hazardous waste roll-off boxes pending determination of hazardous status. Roll-off boxes will be situated such that the general public does not have access to them.

3. Not applicable. At the time of this submission we do not suspect any free product will be found.

4. This data is not available.

5. Tank integrity tests are enclosed.

6. Following is an outline of steps to determine scope of contamination and a time table for those steps:

   I. Excavation and removal of leaking underground storage tanks.

      a) Complete by 7/23/90

   II. Visual inspection of the excavation and an HNU meter will be used to determine if additional sampling other than those listed in Item III, below, is necessary. If necessary samples will be collected at surface level.

      a) Conduct 7/23-24/90

   III. Three grab samples of surface soil at the bottom of the excavation will be taken and sent to a laboratory to determine if product is present. Analysis for stoddard solvent and petroleum products will be conducted.

      a) Collect Samples 7/23-24/90
      b) Analytical results 8/13/90

   IV. If results indicate contamination, soil will be excavated until uncontaminated soil is attained or it is economically or mechanically impractical (at that time other means of remediation will be evaluated).

      a) Soil excavation 9/4/90

   A site map is included in the attachments.

7. Following is a list of contractors whose services have been or will be secured to perform the remediation:

   International Piping Systems
   9329 Bernice Avenue
   P. O. Box 2100
   Schiller Park, IL 60176

Rockford Blacktop
600 Boylston St.
Loves Park, IL 61130

TMT Transport
3210 East 211th Street
Lynwood, IL 60411

NET Midwest, Inc.
3548 35th Street
Rockford, IL 61109

and/or

CBC Environmental Services
140 East Ryan Road
Oak Creek, WI 53154

If you have any questions or require additional information, please contact me at (815) 226-6934.

Sincerely,

Al Munn, Environmental, Health and Safety Manager

AM:cw

Copy: Illinois State Fire Marshal
Underground Storage Tank Section
1035 Stevenson Drive
Springfield, IL 62703

Illinois Emergency Services and Disaster Agency
110 East Adams Street
Springfield, IL 62706

Linda Aylward
Corporate Law Office

Mark Chiado
Corporate Loss Control

Complete this form.

Contingency Plan
Leaking Underground Storage Tank Problems

City Rockford Incident # 901617
Site Name Sundstrand ATG
Address 4747 Harrison Ave.
Rockford, Illinois
Site Phone (815) 226-6000

Person representing the site with authority to approve remediation expenditures in an emergency
Al Munn
Phone (815) 226-6000
After-hours Phone (815) 226-6000

Contractor Hired for Tank Removal International Piping Systems
Phone (708) 671-7725
After-hours Phone Same

Contractor Available for Emergency Response Same
Phone
After-hours Phone

In case of Additional Petroleum Product spillage or discovery of products or vapors in the Sewers, Streams, and/or Buildings *IMMEDIATELY* Notify all the Following:

Local Fire Department Rockford Fire Dept. Phone (815) 964-3321

Local Police Department Rockford Police Dept Phone (815) 987-5800

Sewer Authority Rock River Reclam. District Phone (815) 397-9700
After-Hours Phone (815) 397-9422

Illinois Emergency Services and Disaster Agency and ask for the IEPA Duty Officer Phone 800/782-7860

Confirm that the emergency contractor is available and willing to respond to this site. Then post the original in a prominent place for your employees and send the carbon to:

IEPA-ERU #29
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Illinois Environmental Protection Agency — Emergency Response IEPA-ERU
Phone 217/782-3637

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

05-11-90

Sample No: 73067

SAMPLE DESCRIPTION: Influent Well #3
Aqua Detox Tower Sample
Date Taken: 04-25-90 1000 Date Received: 04-27-90 1630

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	3.6	ug/L
Tetrachloroethene	120.	ug/L
Toluene	75.	ug/L
1,1,1-Trichloroethane	1220.	ug/L
Trichloroethene	150.	ug/L

Brian Wanner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

05-11-90

Sample No: 73068

SAMPLE DESCRIPTION: Influent Combined
Aqua Detox Tower Sample
Date Taken: 04-25-90 1000 Date Received: 04-27-90 1630

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10.	ug/L
Tetrachloroethene	100.	ug/L
Toluene	<10.	ug/L
1,1,1-Trichloroethane	1390.	ug/L
Trichloroethene	110.	ug/L

Brian Wanner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

05-11-90

Sample No: 73069

SAMPLE DESCRIPTION: Effluent
Aqua Detox Tower Sample
Date Taken: 04-25-90 1000 Date Received: 04-27-90 1630

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10.	ug/L
Tetrachloroethene	160.	ug/L
Toluene	530.	ug/L
1,1,1-Trichloroethane	2200.	ug/L
Trichloroethene	180.	ug/L

Brian Wanner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

05-11-90

Sample No: 73066

SAMPLE DESCRIPTION: Influent Well #2
Aqua Detox Tower Sample

Date Taken: 04-25-90 1000

Date Received: 04-27-90 1630

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1000.	ug/L
Tetrachloroethene	1,150.	ug/L
Toluene	157,700.	ug/L
1,1,1-Trichloroethane	20,910.	ug/L
Trichloroethene	<1000.	ug/L

Brian Wanner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

05-11-90

Sample No: 73065

SAMPLE DESCRIPTION: Influent Well #1
Aqua Detox Tower Sample
Date Taken: 04-25-90 1000

Date Received: 04-27-90 1630

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10.	ug/L
Tetrachloroethene	98.	ug/L
Toluene	<10.	ug/L
1,1,1-Trichloroethane	1180.	ug/L
Trichloroethene	100.	ug/L

Brian Wanner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

04-09-90

Sample No: 71559

SAMPLE DESCRIPTION: Influent Well #1
Aqua Detox Tower Samples

Date Taken: 03-16-90 0900

Date Received: 03-16-90 1400

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	120.	ug/L
Toluene	<100.	ug/L
1,1,1-Trichloroethane	1,100.	ug/L
Trichloroethene	170.	ug/L

Brian Wanner

Brian Wanner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

04-09-90

Sample No: 71560

SAMPLE DESCRIPTION: Influent Well #2
Aqua Detox Tower Samples

Date Taken: 03-16-90 0900

Date Received: 03-16-90 1400

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10000.	ug/L
Tetrachloroethene	<10000.	ug/L
Toluene	140,000.	ug/L
1,1,1-Trichloroethane	67,000.	ug/L
Trichloroethene	<10000.	ug/L

Brian Wanner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

04-09-90

Sample No: 71561

SAMPLE DESCRIPTION: Influent Well #3
Aqua Detox Tower Samples

Date Taken: 03-16-90 0900

Date Received: 03-16-90 1400

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<50.	ug/L
Tetrachloroethene	90.	ug/L
Toluene	60.	ug/L
1,1,1-Trichloroethane	1,500.	ug/L
Trichloroethene	120.	ug/L

Brian Wanner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

04-09-90

Sample No: 71562

SAMPLE DESCRIPTION: Influent Combined
Aqua Detox Tower Samples

Date Taken: 03-16-90 0900

Date Received: 03-16-90 1400

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<500.	ug/L
Tetrachloroethene	<500.	ug/L
Toluene	<500.	ug/L
1,1,1-Trichloroethane	1,500.	ug/L
Trichloroethene	500.	ug/L

Brian Wanner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

04-09-90

Sample No: 71563

SAMPLE DESCRIPTION: Effluent
Aqua Detox Tower Samples
Date Taken: 03-16-90 0900 Date Received: 03-16-90 1400

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1.0	ug/L
Tetrachloroethene	<1.0	ug/L
Toluene	<1.0	ug/L
1,1,1-Trichloroethane	<1.0	ug/L
Trichloroethene	<1.0	ug/L

Brian Wanner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

01-31-90

Sample No: 69804

SAMPLE DESCRIPTION: Influent Well #1
Aqua Detox Tower Samples

Date Taken: 01-17-90 0900

Date Received: 01-17-90 1500

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<50.	ug/L
Tetrachloroethene	80.	ug/L
Toluene	<50.	ug/L
1,1,1-Trichloroethane	810.	ug/L
Trichloroethene	100.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

01-31-90

Sample No: 69805

SAMPLE DESCRIPTION: Influent Well #2
Aqua Detox Tower Samples
Date Taken: 01-17-90 0900 Date Received: 01-17-90 1500

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10000.	ug/L
Tetrachloroethene	<10000.	ug/L
Toluene	120000.	ug/L
1,1,1-Trichloroethane	31000.	ug/L
Trichloroethene	<10000.	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

01-31-90

Sample No: 69806

SAMPLE DESCRIPTION: Influent Well #3
Aqua Detox Tower Samples

Date Taken: 01-17-90 0900

Date Received: 01-17-90 1500

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<25.	ug/L
Tetrachloroethene	55.	ug/L
Toluene	<25.	ug/L
1,1,1-Trichloroethane	710.	ug/L
Trichloroethene	85.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

01-31-90

Sample No: 69807

SAMPLE DESCRIPTION: Influent Combined
Aqua Detox Tower Samples

Date Taken: 01-17-90 0900

Date Received: 01-17-90 1500

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<500.	ug/L
Tetrachloroethene	<500.	ug/L
Toluene	4900.	ug/L
1,1,1-Trichloroethane	3300.	ug/L
Trichloroethene	<500.	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

01-31-90

Sample No: 69808

SAMPLE DESCRIPTION: Effluent
Aqua Detox Tower Samples

Date Taken: 01-17-90 0900

Date Received: 01-17-90 1500

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1.0	ug/L
Tetrachloroethene	<1.0	ug/L
Toluene	<1.0	ug/L
1,1,1-Trichloroethane	<1.0	ug/L
Trichloroethene	<1.0	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-26-89

Sample No: 67163

SAMPLE DESCRIPTION: Influent Well #1
Aqua Detox Tower Samples

Date Taken: 10-16-89 1000

Date Received: 10-17-89 0900

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10.	ug/L
Tetrachloroethene	100.	ug/L
Toluene	<10.	ug/L
1,1,1-Trichloroethane	1,800.	ug/L
Trichloroethene	180.	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-26-89

Sample No: 67164

SAMPLE DESCRIPTION: Influent Well #2
Aqua Detox Tower Samples

Date Taken: 10-16-89 1000

Date Received: 10-17-89 0900

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1000.	ug/L
Tetrachloroethene	3,100.	ug/L
Toluene	97,000.	ug/L
1,1,1-Trichloroethane	50,000.	ug/L
Trichloroethene	3,400.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-26-89

Sample No: 67165

SAMPLE DESCRIPTION: Influent Well #3
Aqua Detox Tower Samples
Date Taken: 10-16-89 1000 Date Received: 10-17-89 0900

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10.	ug/L
Tetrachloroethene	170.	ug/L
Toluene	220.	ug/L
1,1,1-Trichloroethane	2,400.	ug/L
Trichloroethene	230.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-26-89

Sample No: 67166

SAMPLE DESCRIPTION: Influent Combined
Aqua Detox Tower Samples

Date Taken: 10-16-89 1000

Date Received: 10-17-89 0900

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	300.	ug/L
Toluene	5,900.	ug/L
1,1,1-Trichloroethane	4,800.	ug/L
Trichloroethene	400.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-26-89

Sample No: 67167

SAMPLE DESCRIPTION: Effluent
Aqua Detox Tower Samples
Date Taken: 10-16-89 1000 Date Received: 10-17-89 0900

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	220.	ug/L
Toluene	7,400.	ug/L
1,1,1-Trichloroethane	4,200.	ug/L
Trichloroethene	370.	ug/L

NOTE: Results on this sample have been confirmed by a repeat analysis.

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-17-89

Sample No: 66082

SAMPLE DESCRIPTION: Influent Well #1
Aqua Detox Tower Samples

Date Taken: 09-18-89 1000

Date Received: 09-18-89 1615

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1.0	ug/L
Tetrachloroethene	68.	ug/L
Toluene	17.	ug/L
1,1,1-Trichloroethane	770.	ug/L
Trichloroethene	119.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-17-89

Sample No: 66083

SAMPLE DESCRIPTION: Influent Well #2
Aqua Detox Tower Samples

Date Taken: 09-18-89 1000

Date Received: 09-18-89 1615

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	556.	ug/L
Toluene	71000.	ug/L
1,1,1-Trichloroethane	18000.	ug/L
Trichloroethene	<100.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-17-89

Sample No: 66084

SAMPLE DESCRIPTION: Influent Well #3
Aqua Detox Tower Samples
Date Taken: 09-18-89 1000

Date Received: 09-18-89 1615

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10.	ug/L
Tetrachloroethene	57.	ug/L
Toluene	30.	ug/L
1,1,1-Trichloroethane	660.	ug/L
Trichloroethene	110.	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-17-89

Sample No: 66085

SAMPLE DESCRIPTION: Influent Combined
Aqua Detox Tower Samples

Date Taken: 09-18-89 1000

Date Received: 09-18-89 1615

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<10.	ug/L
Tetrachloroethene	70.	ug/L
Toluene	<10.	ug/L
1,1,1-Trichloroethane	780.	ug/L
Trichloroethene	110.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

10-17-89

Sample No: 66086

SAMPLE DESCRIPTION: Effluent
Aqua Detox Tower Samples

Date Taken: 09-18-89 1000

Date Received: 09-18-89 1615

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1.0	ug/L
Tetrachloroethene	<1.0	ug/L
Toluene	<1.0	ug/L
1,1,1-Trichloroethane	<1.0	ug/L
Trichloroethene	<1.0	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

08-31-89

Sample No: 64856

SAMPLE DESCRIPTION: Influent Well #1
Aqua Detox Tower Samples

Date Taken: 08-14-89 1430

Date Received: 08-15-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	160.	ug/L
Toluene	450.	ug/L
1,1,1-Trichloroethane	865.	ug/L
Trichloroethene	240.	ug/L

Tom Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

08-31-89

Sample No: 64857

SAMPLE DESCRIPTION: Influent Well #2
Aqua Detox Tower Samples

Date Taken: 08-14-89 1430

Date Received: 08-15-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<5000.	ug/L
Tetrachloroethene	<5000.	ug/L
Toluene	101,500.	ug/L
1,1,1-Trichloroethane	61,500.	ug/L
Trichloroethene	<5000.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

08-31-89

Sample No: 64858

SAMPLE DESCRIPTION: Influent Well #3
Aqua Detox Tower Samples

Date Taken: 08-14-89 1430

Date Received: 08-15-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<25.	ug/L
Tetrachloroethene	38.	ug/L
Toluene	<25.	ug/L
1,1,1-Trichloroethane	320.	ug/L
Trichloroethene	55.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

08-31-89

Sample No: 64859

SAMPLE DESCRIPTION: Influent Combined
Aqua Detox Tower Samples
Date Taken: 08-14-89 1430

Date Received: 08-15-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	390.	ug/L
Toluene	3,600.	ug/L
1,1,1-Trichloroethane	5,500.	ug/L
Trichloroethene	520.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

08-31-89

Sample No: 64860

SAMPLE DESCRIPTION: Effluent
Aqua Detox Tower Samples
Date Taken: 08-14-89 1430

Date Received: 08-15-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1.0	ug/L
Tetrachloroethene	<1.0	ug/L
Toluene	<1.0	ug/L
1,1,1-Trichloroethane	1.5	ug/L
Trichloroethene	<1.0	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

06-06-89

Sample No: 62641

SAMPLE DESCRIPTION: Influent Well #1
Aqua Detox Tower Samples

Date Taken: 05-18-89 0900

Date Received: 05-18-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	160.	ug/L
Toluene	<100.	ug/L
1,1,1-Trichloroethane	2230.	ug/L
Trichloroethene	140.	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

06-06-89

Sample No: 62642

SAMPLE DESCRIPTION: Influent Well #2
Aqua Detox Tower Samples

Date Taken: 05-18-89 0900

Date Received: 05-18-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<5000.	ug/L
Tetrachloroethene	<5000.	ug/L
Toluene	127000.	ug/L
1,1,1-Trichloroethane	38500.	ug/L
Trichloroethene	<5000.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

06-06-89

Sample No: 62643

SAMPLE DESCRIPTION: Influent Well #3
Aqua Detox Tower Samples

Date Taken: 05-18-89 0900

Date Received: 05-18-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<25.	ug/L
Tetrachloroethene	<25.	ug/L
Toluene	<25.	ug/L
1,1,1-Trichloroethane	240.	ug/L
Trichloroethene	<25.	ug/L

Toni Gartner, Manager
Rockford Division

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

06-06-89

Sample No: 62644

SAMPLE DESCRIPTION: Influent Combined
Aqua Detox Tower Samples

Date Taken: 05-18-89 0900

Date Received: 05-18-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<100.	ug/L
Tetrachloroethene	130.	ug/L
Toluene	<100.	ug/L
1,1,1-Trichloroethane	900.	ug/L
Trichloroethene	130.	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Al Munn
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

06-06-89

Sample No: 62645

SAMPLE DESCRIPTION: Effluent
Aqua Detox Tower Samples

Date Taken: 05-18-89 0900

Date Received: 05-18-89

VOLATILE COMPOUNDS

trans-1,2-Dichloroethene	<1.0	ug/L
Tetrachloroethene	<1.0	ug/L
Toluene	<1.0	ug/L
1,1,1-Trichloroethane	1.2	ug/L
Trichloroethene	<1.0	ug/L

Toni Gartner, Manager
Rockford Division

PREPARED FOR:

Harding Lawson Associates
1301 Pennsylvania Street, Suite 200
Denver, Colorado 80203

SHALLOW SOIL GAS INVESTIGATION
SUNDSTRAND FACILITY
ROCKFORD, ILLINOIS

OCTOBER 1989

SUBMITTED BY:

Tracer Research Corporation

HLASUNDS.MSG
J-198-89-SG

TABLE OF CONTENTS

INTRODUCTION

A shallow soil gas investigation was performed by Tracer Research Corporation (TRC) at the Sundstrand facility in Rockford, Illinois. The investigation was conducted on October 2, 1989 under contract to Harding Lawson Associates. The purpose of the investigation was to determine the presence of volatile organic compounds (VOCs) in the soil gas as part of a site assessment.

During this survey, a total of fourteen soil gas samples were collected and analyzed in the field. Samples were analyzed for volatile compounds from the following suite:

1,1-dichloroethene (1,1-DCE)
1,1,1-trichloroethane (TCA)
trichloroethene (TCE)
tetrachloroethene (PCE)
toluene

The compounds in this suite were chosen as target compounds based on chemicals suspected of being present in the subsurface. Soil gas samples were screened on the electron capture detector (ECD) and flame ionization detector (FID). Analytical results are condensed in Appendix A and reported in micrograms per liter (ug/L).

SHALLOW SOIL GAS INVESTIGATION - METHODOLOGY

Shallow soil gas investigation refers to a method developed by TRC for investigating underground contamination from volatile organic chemicals (VOCs) such as industrial solvents, cleaning fluids and petroleum products by looking for their vapors in the shallow soil gas. The method involves pumping a small amount of soil gas out of the ground through a hollow probe driven into the ground and analyzing the gas for the presence of volatile contaminants. The presence of VOCs in shallow soil gas indicates the observed compounds may either be in the vadose zone near the probe or in groundwater below the probe. The soil gas technology is most effective in mapping low molecular weight halogenated solvent chemicals and petroleum hydrocarbons possessing high vapor pressures and low aqueous solubilities. These compounds readily partition out of the groundwater and into the soil gas as a result of their high gas/liquid partitioning coefficients. Once in the soil gas, VOCs diffuse vertically and horizontally through the soil to the ground surface where they dissipate into the atmosphere. The contamination acts as a source and the above ground atmosphere acts as a sink, and typically a concentration gradient develops between the two. The concentration gradient in soil gas between the source and ground surface may be locally distorted by hydrologic and geologic anomalies (e.g. clays, perched water); however, soil gas mapping generally remains effective because distribution of the contamination is usually broader in areal extent than the local geologic barriers and is defined using a large data base. The presence of geologic obstructions on a small scale tends to create anomalies in the soil gas-groundwater correlation, but generally does not obscure the broader areal picture of the contaminant distribution.

EQUIPMENT

Tracer Research Corporation utilized a one ton Ford analytical field van that was equipped with one gas chromatograph and two Spectra Physics SP4270 computing integrators. In addition, the van has two built-in gasoline powered generators that provide the electrical power (110 volts AC) to operate all of the gas chromatographic instruments and field equipment. A specialized hydraulic mechanism consisting of two cylinders and

a set of jaws was used to drive and withdraw the sampling probes. A hydraulic hammer was used to assist in driving probes past cobbles and through unusually hard soil.

SAMPLING PROCEDURES

Sampling probes consist of 7 to 10-foot lengths of 3/4 inch diameter hollow steel pipe that are fitted with detachable drive points. Soil gas samples were collected by driving the steel probe to a depths of 4-6 feet into the ground. A Kango hammer-drill was used to pierce holes in the concrete and asphalt so that probes could be inserted into the soil. Once inserted into the ground, the above-ground end of the sampling probes were fitted with a steel reducer and a length of polyethylene tubing leading to a vacuum pump. Gas flow is monitored by a vacuum gauge to insure that an adequate flow is obtained.

To adequately purge the volume of air within the probe, 2 to 5 liters of gas were evacuated with a vacuum pump. During the soil gas evacuation, samples were collected in a glass syringe by inserting a syringe needle through a silicone rubber segment in the evacuation line and down into the steel probe. Ten milliliters of gas were collected for immediate analysis in the TRC analytical field van. Soil gas was subsampled (duplicate injections) in volumes ranging from 1 uL to 2 mL, depending on the VOC concentration at any particular location.

Sample probe vacuum pressures measured with a vacuum gauge ranged form three to fifteen inches Hg. Maximum vacuum pump pressure was measured at twenty-four inches Hg.

ANALYTICAL PROCEDURES

A Varian 3300 gas chromatograph, equipped with an electron capture detector (ECD) and a flame ionization detector (FID), was used for the soil gas analyses. The ECD was used for the analyses 1,1-DCE, TCA, TCE and PCE, while the FID was used to analyze toluene. Compounds were separated on a 6' by 1/8" OD packed column with OV-101 as the stationary phase. Nitrogen was used as the carrier gas.

Halocarbon and hydrocarbon compounds detected in soil gas were identified by

chromatographic retention time. Quantification of compounds was achieved by comparison of the detector response of the sample with the response measured for calibration standards (external standardization). Instrument calibration checks were run periodically throughout the day as were system blanks to check for contamination in the soil gas sampling equipment. Air samples were also routinely analyzed to check for background levels in the atmosphere.

Detection limits for the compounds of interest are a function of the injection volume as well as the detector sensitivity for individual compounds. Thus, the detection limit varies with the sample size. Generally, the larger the injection size the greater the sensitivity. However, peaks for compounds of interest must be kept within the linear range of the analytical equipment. If any compound has a high concentration, it is necessary to use small injections, and in some cases to dilute the sample to keep it within linear range. This may cause decreased detection limits for other compounds in the analyses.

The detection limits for the selected compounds were as follows; 1,1-DCE (<0.001 ug/L), TCA (<0.00003 ug/L), TCE (<0.00007 ug/L) and PCE (<0.00002 ug/L), and approximately 0.02 ug/L for toluene, depending on the conditions of the measurement, in particular, the sample size. If any component being analyzed is not detected, the detection limit for that compound in that analysis is given as a "less than" value (e.g. <0.002 ug/L). Detection limits obtained from GC analyses are calculated from the current response factor, the sample size, and the estimated minimum peak size (area) that would have been visible under the conditions of the measurement.

QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

Tracer Research Corporation's normal quality assurance procedures were followed in order to prevent any cross-contamination of soil gas samples.

- Steel probes are used only once during the day and then washed with high pressure soap and hot water spray or steam-cleaned to eliminate the possibility of cross-contamination. Enough probes are carried on each van to avoid the need to reuse any during the day.
- Probe adaptors (steel reducer and tubing) are used once during the course of the day and cleaned at the end of each working day by baking in the GC oven. The tubing is replaced periodically as needed during the job to insure cleanliness and good fit.
- Silicone tubing (connecting the adaptor to the vacuum pump) is replaced as needed to insure proper sealing around the syringe needle. This tubing does not directly contact soil gas samples.
- Glass syringes are usually used for only one sample per day and are washed and baked out at night. If they must be used twice, they are purged with carrier gas (nitrogen) and baked out between probe samplings.
- Injection port septa through which soil gas samples are injected into the chromatograph are replaced on a daily basis to prevent possible gas leaks from the chromatographic column.
- Analytical instruments were calibrated each day by analytical standards from Chem Service, Inc. Calibration checks are also run after approximately every five soil gas sampling locations.
- 2 cc subsampling syringes are checked for contamination prior to sampling each day by injecting nitrogen carrier gas into the gas chromatograph.
- Prior to sampling each day, system blanks are run to check the sampling apparatus (probe, adaptor, 10 cc syringe) for contamination by drawing ambient air from above ground through the system and comparing the analysis to a concurrently sampled air analysis.

. All sampling and 2 cc subsampling syringes are decontaminated each day and no such equipment is reused before being decontaminated. Microliter size subsampling syringes are reused only after a nitrogen carrier gas blank is run to insure it is not contaminated by the previous sample.

. Soil gas pumping is monitored by a vacuum gauge to insure that an adequate gas flow from the vadose zone is maintained. A negative pressure (vacuum) of 2 in. Hg less than the maximum capacity of the pump (evacuation rate <0.02 cfm) usually indicates that a reliable gas sample cannot be obtained because the soil has a very low air permeability.

APPENDIX A: CONDENSED DATA

HARDING LAWSON/SUNDSTRAND/ROCKFORD, ILLINOIS JOB#J-198-89-SG
10/2/89
CONDENSED DATA SHEET

SAMPLE	1,1 DCE ug/l	TCA ug/l	TCE ug/l	PCE ug/l	Toluene ug/l
AIR	<0.001	0.0005	0.003	<0.00002	<0.04
SG-1-5'	<0.001	0.0006	<0.00007	<0.00002	<0.04
SG-2-4'	<0.002	0.0007	<0.0002	<0.00004	<0.04
SG-3-4'	<0.001	0.003	<0.00007	0.0003	<0.04
Air	<0.001	0.0004	<0.00007	<0.00002	<0.04
SG-4-6'	0.6	0.02	<0.0004	0.0002	<0.1
SG-5-6'	<0.02	<0.0007	<0.002	<0.0004	<0.2
SG-6-6'	<0.002	0.01	<0.0002	0.0008	<0.04
SG-7-6'	<0.001	<0.00003	<0.00007	<0.00002	<0.04
SG-8-4'	<0.001	0.001	<0.00007	<0.00002	<0.04
SG-9-5'	<0.001	0.001	<0.00007	0.00009	<0.04
Air	<0.001	0.0005	<0.00007	<0.00002	<0.09
10/3/89					
AIR	<0.003	<0.00008	<0.0002	<0.00005	<0.05
SG-10-4'	<0.006	0.006	<0.0004	<0.0001	<0.05
SG-11-5'	<0.003	<0.00008	<0.0002	<0.00005	<0.05
SG-12-4'	<0.006	0.004	<0.0004	<0.0001	<0.02
SG-13-4'	8	0.2	<0.004	0.04	<0.05
SG-14-6'	<0.06	0.08	<0.004	0.01	<0.05
AIR	4	0.1	<0.0007	0.04	<0.05

Analyzed by: P. Reko
Checked by: R. Sheldrake
Proofed by: L. Laplander

Tracer Research Corporation

5555 Glenwood ...s Parkway, SE • Grand Rapids, Michigan 49508 • (... 942-9600

EDI Engineering & Science
Environmental Engineering,
Geology, Biology and Chemistry

June 16, 1989

Ms. Linda A. Aylward
Senior Associate Attorney
Sundstrand Corporation
P O Box 7003
4949 Harrison Avenue
Rockford, IL 61125-7003

Dear Ms. Aylward:

The April 1989 analytical and water elevation data from the quarterly sample collection at Sundstrand Corporation in Rockford, Illinois are enclosed. A summary of the previous data is also included. Additional copies of the report have been enclosed for you to distribute in-house.

Each sample was analyzed for a complete VOC scan this quarter; samples collected in the future will be analyzed in accordance with EDI Engineering & Science's work plan dated May 3, 1989. The next quarterly sampling event is scheduled for approximately July 25, 1989.

Please contact us if you have any questions or comments.

Sincerely,

EDI ENGINEERING & SCIENCE

Celeste M. Greene
Environmental Monitoring Specialist

David E. Swanson
Project Manager

CMG/DES/mck

Enclosures

TABLE 1. SUMMARY OF GROUND WATER LEVEL MEASUREMENTS.

WELL NUMBER	AQUIFER	T.O.C. ELEV.	WELL DEPTH	4/23/85 DEPTH TO WATER	4/15/86 DEPTH TO WATER	11/19/86 DEPTH TO WATER	3/15/89 DEPTH TO WATER	3/27/89 DEPTH TO WATER	4/24/89 DEPTH TO WATER	4/23/85 ELEV. OF WATER	4/15/86 ELEV. OF WATER	11/19/86 ELEV. OF WATER	3/15/89 ELEV. OF WATER	3/27/89 ELEV. OF WATER	4/24/89 ELEV. OF WATER
MW-3	D	845.68	12	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
MW-2	B	845.65	42	32.61	34.82	34.84	39.07	39.03	39.28	813.04	810.83	810.81	806.58	806.62	806.37
MW-5	B	845.80	65	35.89	40.07	40.69	45.22	45.25	45.58	809.91	805.73	805.11	800.58	800.55	800.22
MW-1	B	845.67	127	38.01	39.65	39.33	48.48	48.61	48.64	807.66	806.02	806.34	797.19	797.06	797.03
MW-4A	B	845.62	38	(3)	30.02	29.48	31.68	31.65	31.76	(3)	815.60	816.14	813.94	813.97	813.86
MW-6	B	845.70	38	26.88	27.71	27.35	36.82	36.89	37.20	818.82	817.99	818.35	808.88	808.81	808.50
MW-7	D	834.25	31	25.36	27.07	26.48	28.09	28.14	28.26	808.89	807.18	807.77	806.16	806.11	805.99
MW-9	B	834.38	53	35.06	35.15	35.22	41.56	42.05	42.40	799.32	799.23	799.16	792.82	792.33	791.98
MW-18	B	834.68	151	34.28	34.49	34.61	41.25	41.92	42.24	800.40	800.19	800.07	793.43	792.76	792.44
MW-8	D	820.55	19	10.20	10.30	9.84	10.21	11.30	11.90	810.35	810.25	810.71	810.34	809.25	808.65
MW-17	B	819.95	152	12.84	13.15	13.24	20.66	20.81	21.20	807.11	806.80	806.71	799.29	799.14	798.75
MW-11	D	843.32	39	27.17	37.41	37.73	DRY	DRY	DRY	816.15	805.91	805.59	DRY	DRY	DRY
MW-10	B	843.38	87	36.41	37.15	37.43	45.20	45.29	45.56	806.97	806.23	805.95	798.18	798.09	797.82
MW-16	B	843.23	201	36.34	36.68	36.76	45.37	45.47	45.80	806.89	806.55	806.47	797.86	797.76	797.43
MW-12	B	854.72	31	30.94	30.16	31.52	(1)	(1)	(1)	823.78	824.56	823.20	(1)	(1)	(1)
MW-13	B	854.76	66	35.53	35.51	36.36	(1)	(1)	(1)	819.23	819.25	818.40	(1)	(1)	(1)
MW-14	B	854.73	101	35.78	35.95	36.74	(1)	(1)	(1)	818.95	818.78	817.99	(1)	(1)	(1)

TABLE 1. SUMMARY OF GROUND WATER LEVEL MEASUREMENTS.

WELL NUMBER	AQUIFER	T.O.C. ELEV.	WELL DEPTH	4/23/85 DEPTH TO WATER	4/15/86 DEPTH TO WATER	11/19/86 DEPTH TO WATER	3/15/89 DEPTH TO WATER	3/27/89 DEPTH TO WATER	4/24/89 DEPTH TO WATER	4/23/85 ELEV. OF WATER	4/15/86 ELEV. OF WATER	11/19/86 ELEV. OF WATER	3/15/89 ELEV. OF WATER	3/27/89 ELEV. OF WATER	4/24/89 ELEV. OF WATER
MW-15	B	845.46	50	35.77	38.99	39.40	44.96	44.89	45.20	809.69	806.47	806.06	800.50	800.57	800.26
MW-19	D	828.14	40	29.74	29.70	29.64	35.12	35.22	35.55	798.40	798.44	798.50	793.02	792.92	792.59
MW-29	B	827.81	113	(3)	28.17	28.26	34.87	35.13	35.40	(3)	799.64	799.55	792.94	792.68	792.41
MW-20	B	828.19	145	28.35	28.38	28.47	35.11	35.35	35.65	799.84	799.81	799.72	793.08	792.84	792.54
MW-30	B	841.62	39	(3)	37.38	35.47	DRY	DRY	DRY	(3)	804.24	806.15	DRY	DRY	DRY
MW-21	D	825.87	76	25.52	25.70	25.77	31.99	32.18	32.54	800.35	800.17	800.10	793.88	793.69	793.33
MW-22	B	825.44	145	26.42	26.61	26.65	32.64	32.84	33.21	799.02	798.83	798.79	792.80	792.60	792.23
MW-31A	D	835.99	45	(3)	(3)	36.61	43.09	43.30	43.70	(3)	(3)	799.38	792.90	792.69	792.29
MW-31	B	834.94	65	(3)	(3)	35.38	41.68	42.08	42.43	(3)	(3)	799.56	793.26	792.86	792.51
MW-23	B	844.51	64	(3)	37.16	37.48	(2)	44.61	44.95	(3)	807.35	807.03	(2)	799.90	799.56
MW-24	B	844.38	74	(3)	40.85	40.60	47.11	47.10	47.18	(3)	803.53	803.78	797.27	797.28	797.20
MW-25	B	844.11	138	(3)	39.58	40.04	48.55	48.75	48.48	(3)	804.53	804.07	795.56	795.36	795.63
MW-26	B	846.00	95	(3)	40.79	41.20	49.36	49.41	49.42	(3)	805.21	804.80	796.64	796.59	796.58
MW-27	B	834.21	73	(3)	25.36	25.16	34.18	34.06	34.15	(3)	808.85	809.05	800.03	800.15	800.06
MW-28A	D	830.69	65	(3)	(3)	27.81	34.52	32.66	34.68	(3)	(3)	802.88	796.17	798.03	796.01
MW-28B	D	830.59	85	(3)	(3)	27.41	34.18	32.34	35.02	(3)	(3)	803.18	796.41	798.25	795.57

TABLE 1. SUMMARY OF GROUND WATER LEVEL MEASUREMENTS.

WELL NUMBER	AQUIFER	T.O.C. ELEV.	WELL DEPTH	4/23/85 DEPTH TO WATER	4/15/86 DEPTH TO WATER	11/19/86 DEPTH TO WATER	3/15/89 DEPTH TO WATER	3/27/89 DEPTH TO WATER	4/24/89 DEPTH TO WATER	4/23/85 ELEV. OF WATER	4/15/86 ELEV. OF WATER	11/19/86 ELEV. OF WATER	3/15/89 ELEV. OF WATER	3/27/89 ELEV. OF WATER	4/24/89 ELEV. OF WATER
MW-28	B	830.35	107	(3)	26.70	26.70	33.86	34.02	34.40	(3)	803.65	803.65	796.49	796.33	795.95
MW-32A	D	844.61	48	(3)	(3)	41.08	DRY	48.20	48.53	(3)	(3)	803.53	DRY	796.41	796.08
MW-32	B	844.77	66	(3)	(3)	41.31	48.28	48.39	48.73	(3)	(3)	803.46	796.49	796.38	796.04

T.O.C. REFERS TO "TOP OF CASING".

D" REFERS TO A DRIFT AQUIFER AND "B" REFERS TO BEDROCK.

(1) THESE WELLS WERE ABANDONED DUE TO BUILDING CONSTRUCTION.

(2) OBSTRUCTION IN WELL.

(3) WELL DID NOT EXIST ON THIS DATE.

SUMMARY OF GROUND WATER QUALITY ANALYSES FOR VOLATILE ORGANIC COMPOUNDS (mg/L)

WELL NO.	WELL DEPTH	AQ	ROCK DEPTH	DATE SAMPLED	LAB.	BENZENE	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE	PCE	1,1,1-TCA	TCE	TOLUENE	OTHER
EFF				04/26/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	1	
IN				04/26/89	EDI	nd	37	nd	210	nd	93	920	120	550	
PW-1				04/28/88	NET	--	--	--	--	nd	220	2900	335	65	
PW-1				07/12/88	NET	--	--	--	--	nd	240	2250	310	150	
PW-1				08/17/88	NET	--	--	--	--	nd	nd	2350	320	250	
PW-1				10/18/88	NET	--	--	--	--	nd	190	1300	300	nd	
PW-1				12/13/88	NET	--	--	--	--	nd	220	2000	240	nd	
PW-1				01/26/89	NET	--	--	--	--	nd	210	2360	250	180	
PW-1				04/26/89	EDI	nd	42	nd	360	nd	110	1700	170	540	
PW-2				04/28/88	NET	--	--	--	--	nd	nd	29500	nd	45500	
PW-2				07/12/88	NET	--	--	--	--	nd	nd	38500	nd	76500	
PW-2				08/17/88	NET	--	--	--	--	nd	nd	2850	nd	nd	
PW-2				10/18/88	NET	--	--	--	--	nd	2300	11000	2800	21000	
PW-2				12/13/88	NET	--	--	--	--	nd	120	nd	120	130	
PW-2				01/26/89	NET	--	--	--	--	nd	220	3020	nd	nd	
PW-2				04/26/89	EDI	nd	42	nd	400	nd	130	1900	180	720	
PW-3				02/10/87	EDI	nd	nd	nd	nd	nd	8	111	11	t	
PW-3				04/28/88	NET	--	--	--	--	nd	13	114	19	nd	
PW-3				07/12/88	NET	--	--	--	--	nd	85	880	110	585	
PW-3				08/17/88	NET	--	--	--	--	nd	nd	210	nd	nd	
PW-3				10/18/88	NET	--	--	--	--	nd	nd	110	nd	nd	
PW-3				12/13/88	NET	--	--	--	--	nd	13	87	12	nd	
PW-3				01/26/89	NET	--	--	--	--	nd	28	280	nd	nd	
PW-3				04/26/89	EDI	nd	nd	nd	25	nd	15	170	19	nd	
06	38	B	13	04/17/86	EDI	nd	nd	nd	45	nd	98	270	29	nd	
06				04/25/89	EDI	nd	nd	nd	42	nd	56	230	12	1	
12	31	B	22	04/18/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
13	66	B	22	04/18/86	EDI	2	nd	nd	nd	nd	nd	nd	nd	nd	
14	101	B	22	04/18/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	

SUMMARY OF GROUND WATER QUALITY ANALYSES FOR VOLATILE ORGANIC COMPOUNDS (mg/L)

WELL NO.	WELL DEPTH	AQ	ROCK DEPTH	DATE SAMPLED	LAB.	BENZENE	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE	PCE	1,1,1-TCA	TCE	TOLUENE	OTHER
10	87	B	77	04/17/86	EDI	1	6	3	330	9	140	2100	160	nd	TCFM (1): 4
10				11/13/86	EDI	nd	6	3	310	8	120	1600	130	1	
10				03/16/89	EDI	--	--	--	--	--	--	180	--	--	
10				04/26/89	EDI	nd	nd	nd	45	nd	20	210	16	nd	
11	40	D	77	11/13/86	EDI	nd	nd	nd	11	nd	6	130	6	nd	
16	201	B	77	04/17/86	EDI	1	nd	nd	nd	nd	nd	nd	nd	nd	
16			77	11/14/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
16				04/26/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
08	19	D	133	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	15	nd	
08				04/25/89	EDI	nd	nd	nd	nd	nd	nd	3	nd	nd	
17	154	B	133	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
17				04/25/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
28	107	B	91	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
28				11/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
28				04/25/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
28A	65	D	91	11/18/86	EDI	nd	nd	nd	2	nd	nd	48	nd	nd	
28A				03/16/89	EDI	nd	nd	nd	nd	nd	nd	26	nd	nd	
28A				04/25/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
28B	85	D	91	11/18/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
28B				04/25/89	EDI	nd	nd	nd	nd	nd	nd	28	nd	nd	
21	76	D	137	04/17/86	EDI	nd	9	nd	nd	nd	nd	24	nd	nd	
21				11/14/86	EDI	nd	13	nd	2	3	nd	31	nd	nd	CHLOROETHANE: 11
21				03/16/89	EDI	--	--	--	--	--	--	20	--	--	
21				04/25/89	EDI	nd	3	nd	nd	nd	nd	20	nd	nd	
22	146	B	137	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
22				11/14/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
22(DUP)				11/14/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
22				04/25/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
31	65	B	47	11/20/86	EDI	nd	nd	nd	nd	nd	nd	19	nd	nd	

SUMMARY OF GROUND WATER QUALITY ANALYSES FOR VOLATILE ORGANIC COMPOUNDS (mg/L)

WELL NO.	WELL DEPTH	AQ	ROCK DEPTH	DATE SAMPLED	LAB.	BENZENE	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE	PCE	1,1,1-TCA	TCE	TOLUENE	OTHER
31				03/15/89	EDI	--	--	--	--	--	--	18	--	--	
31				04/25/89	EDI	nd	nd	nd	nd	nd	nd	21	nd	nd	
31A	45	D	47	11/20/86	EDI	nd	nd	nd	3	nd	2	49	nd	nd	
31A(DUP)				11/20/86	EDI	nd	nd	nd	3	nd	2	48	nd	nd	
31A				03/15/89	EDI	--	--	--	--	--	--	57	--	--	
31A				04/25/89	EDI	nd	nd	nd	4	nd	nd	69	nd	nd	
07	30	D	42	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
07				11/12/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
07				04/26/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
09	52	B	42	04/17/86	EDI	nd	2	nd	49	2	23	360	38	nd	
09				11/12/86	EDI	nd	8	4	200	8	100	1400	140	nd	
09				04/26/89	EDI	nd	nd	nd	48	nd	42	230	31	nd	
18	151	B	42	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
18				11/12/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
18				04/26/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
32	66	B	50	11/21/86	EDI	nd	nd	nd	13	17	270	3000	590	nd	
32				03/16/89	EDI	--	--	--	--	--	--	1500	--	--	
32				04/26/89	EDI	nd	nd	nd	410	nd	150	1800	280	nd	
32A	48	D	50	11/21/86	EDI	nd	nd	nd	110	nd	140	970	100	nd	
32A				04/26/89	EDI	nd	nd	nd	120	nd	nd	nd	nd	nd	
30	39	B	20	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
30				11/12/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	CHLOROFORM: 1
19	40	D	100	04/17/86	EDI	2	nd	nd	nd	nd	nd	nd	nd	nd	
19				11/12/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
19				03/16/89	EDI	--	--	--	--	--	--	nd	--	--	
19				04/25/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
20	147	B	100	04/17/86	EDI	1	nd	nd	nd	nd	nd	2	nd	nd	
20				11/17/86	EDI	nd	nd	nd	nd	nd	nd	7	nd	nd	
20				03/16/89	EDI	--	--	--	--	--	--	4.9	--	--	

SUMMARY OF GROUND WATER QUALITY ANALYSES FOR VOLATILE ORGANIC COMPOUNDS (mg/L)

WELL NO.	WELL DEPTH	AQ	ROCK DEPTH	DATE SAMPLED	LAB.	BENZENE	1,1-DCA	1,2-DCA	1,1-DCE	1,2-DCE	PCE	1,1,1-TCA	TCE	TOLUENE	OTHER
20				04/25/89	EDI	nd	nd	nd	nd	nd	nd	4	nd	nd	
29	113	B	100	04/17/86	EDI	1	nd	nd	nd	nd	nd	nd	nd	nd	
29				11/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
29				03/16/89	EDI	--	--	--	--	--	--	1.7	--	--	
29				04/25/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	2	
27	83	B	69	04/17/86	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	
27				04/24/89	EDI	nd	nd	nd	nd	nd	nd	nd	nd	nd	

FOOTNOTES:

(1) TRICHLOROFLUOROMETHANE

"DUP" MEANS DUPLICATE.

A DOUBLE DASH MEANS THE INDICATED CONSTITUENT WAS NOT ANALYZED FOR

"nd" MEANS THE CONSTITUENT WAS "NOT DETECTED".

"t" MEANS TRACE.

AQ" MEANS AQUIFER; A "B" IN THIS COLUMN DESIGNATES A BEDROCK WELL AND A "D" DESIGNATES A DRIFT WELL.

Sundstrand Corporation

CORPORATE OFFICES • 4949 HARRISON AVENUE, P.O. BOX 7003 • ROCKFORD, ILLINOIS 61125-7003 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 25-7440

January 18, 1990

Mr. Steve Colantino
Division of Land Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706

Re: Drinking Water Sample
3115 S. Alpine, Rockford

Dear Steve:

Attached is a copy of the analytical report which we received from the National Environmental Testing, Inc. laboratory. The sample taken from the kitchen tap at 3007 South Alpine was returned showing "nondetect" for all volatile compounds as did the sample taken at 3115 South Alpine which I forwarded to you on December 22, 1989. The only other home of similar age and location (3107 South Alpine) denied having a private drinking water well.

Please feel free to contact me regarding this matter at (815) 226-6880. Thank you for your cooperation.

Very truly yours,

SUNDSTRAND CORPORATION

Linda S. Aylward
Senior Associate Attorney

LSA/cja
Attachment

cc: Daryl Streed, Illinois Environmental Protection Agency
Stan Black
Brad Considine
Bill Coole
Al Munn
Claude Vernam

3007

5 dlgs

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Jeff Lindstrom
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

01-09-90

Sample No: 6938

SAMPLE DESCRIPTION: S-0103-90-A & B,Composite Well Water

Date Taken: 01-03-90 1015

Date Received: 01-03-90 1129

VOLATILE COMPOUNDS

Acrolein	<10.	ug/L
Acrylonitrile	<10.	ug/L
Benzene	<1.0	ug/L
Bromodichloromethane	<1.0	ug/L
Bromoform	<1.0	ug/L
Bromomethane	<10.	ug/L
Carbon tetrachloride	<1.0	ug/L
Chlorobenzene	<1.0	ug/L
Chloroethane	<10.	ug/L
2-Chloroethyl vinyl ether	<1.0	ug/L
Chloroform	<1.0	ug/L
Chloromethane	<10.	ug/L
Dibromochloromethane	<1.0	ug/L
1,2-Dichlorobenzene	<1.0	ug/L
1,3-Dichlorobenzene	<1.0	ug/L
1,4-Dichlorobenzene	<1.0	ug/L
1,1-Dichloroethane	<1.0	ug/L
1,2-Dichloroethane	<1.0	ug/L
1,1-Dichloroethene	<1.0	ug/L
trans-1,2-Dichloroethene	<1.0	ug/L
cis-1,2-Dichloroethene	<1.0	ug/L
1,2-Dichloropropane	<1.0	ug/L
cis-1,3-Dichloropropene	<1.0	ug/L
trans-1,3-Dichloropropene	<1.0	ug/L
Ethylbenzene	<1.0	ug/L

Toni Gartner, Manager
Rockford Division

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Rockford Division
3548 35th Street
Rockford, IL 61109
Tel: (815) 874-2171
Fax: (815) 874-5622

ANALYTICAL REPORT

Mr. Jeff Lindstrom
SUNDSTRAND AVIATION
4747 Harrison Avenue
Rockford IL 61108

01-09-90

Sample No: 69387

SAMPLE DESCRIPTION: S-0103-90-A & B,Composite Well Water

Date Taken: 01-03-90 1015

Date Received: 01-03-90 1129

Methylene chloride	<5.0	ug/L
1,1,2,2-Tetrachloroethane	<1.0	ug/L
Tetrachloroethene	<1.0	ug/L
Toluene	<1.0	ug/L
1,1,1-Trichloroethane	<1.0	ug/L
1,1,2-Trichloroethane	<1.0	ug/L
Trichloroethene	<1.0	ug/L
Vinyl chloride	<10.	ug/L
Xylenes	<1.0	ug/L

Toni Gartner, Manager
Rockford Division

Table 1: Summary of Volatile Organic Analyses Data December 1989

WELL LOCATION / ANALYTES	MW-1	MW-2	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-15	MW-16	MW-17
Vinyl Chloride	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.40	0.30 U	0.30
Chloroethane	0.30 U	2.00	34.00	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	1.00	0.03 J	0.30
Methylene Chloride	0.50 BJ	3.00 B	250.00 E	0.60 U	0.40 BJ	0.60 U	0.30 BJ	0.60 U	2.00 B	0.20 J	0.60
Acetone	2.00 U	23.00 B	2.00 U	2.00 U	1.00 BJ	2.00 U	0.30 BJ	2.00 U	2.00 U	2.00 U	2.00
Carbon Disulfide	0.20 BJ	2.00 B	0.80 B	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.02 BJ	0.40
1,1-Dichloroethene	12.00	9.00	240.00 D	42.00 D	0.30 U	0.30 U	52.00	62.00 D	26.00	0.01 J	0.30
1,1-Dichloroethane	0.20 U	120.00 D	980.00 D	1.00	0.20 U	0.30	2.00	0.80	170.00 D	0.20 U	0.20
1,2-Dichloroethene	0.20 J	2.00	170.00 E	2.00	0.30 U	0.30 U	3.00	2.00	4.00	0.30 U	0.30
Chloroform	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	1.00	0.30 U	0.30 U	0.30 U	0.30
1,2-Dichloroethane	0.70 U	0.70 U	11.00	0.70 U	0.70 U	0.70 U	1.00	0.70 U	0.70 U	0.70 U	0.70
2-Butanone	5.00 U	5.00 U	10.00	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00
1,1,1-Trichloroethane	22.00	82.00 X	1300.00 D	270.00 D	0.03 J	7.00	300.00 E	210.00 D	250.00 D	0.05 J	0.30
Bromodichloromethane	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30
1,2-Dichloropropane	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.008 J	0.40 U	0.40 U	0.40 U	0.40
Trichloroethene	0.60	3.00	84.00 E	13.00	0.30 U	0.30 U	36.00	15.00 D	5.00	0.09 J	0.30
1,1,2-Trichloroethane	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	2.00	0.60 U	0.60 U	0.60 U	0.60
Benzene	0.80	18.00	34.00	0.30	0.20 U	0.20 U	0.10 J	0.20 U	2.00	0.006 J	0.20
2-Hexanone	1.00 U	1.00 U	1.00 U	1.00 U	0.05 J	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00
Tetrachloroethene	0.10 J	1.00	120.00 D	52.00 D	0.20 U	0.20 U	40.00	22.00 D	0.70	0.30	0.20
Toluene	0.30 U	14000.0 D	15000.0 D	0.50	0.20 J	0.30 U	0.08 BJ	0.20 J	780.00 D	0.06 BJ	0.30
Ethylbenzene	0.20 U	0.20 U	0.80	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.40	0.20 U	0.20
Styrene	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40
Xylene (total)	0.50 U	8.00	12.00	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	1.00	0.005 J	0.50

Concentration in micrograms per liter
J=estimated detection at or below CRQL
B=analyte detected in laboratory/field blank
D=sample diluted prior to analysis
U=analyte not detected at or above CRQL
E=estimated detection above CRQL
X=calculation performed manually
DIL=dilution
REAN=reanalysis

Table 1: (continued)

WELL LOCATION	MW-24	MW-25	MW-26	MW-27	MW-28	MW-28A	MW-28B	MW-29	MW-31	MW-31A	MW-32
ANALYTES											
Vinyl Chloride	0.70	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30
Chloroethane	20.00	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.05 J	0.30 U	0.30
Methylene Chloride	900.00 E	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.20 BJ	0.30 BJ	0.70
Acetone	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U	0.60 BJ	3.00 B	4.00
Carbon Disulfide	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.05 BJ	0.10 BJ	0.40
1,1-Dichloroethene	1300.00 D	8.00	42.00 D	0.30 U	0.30 U	0.30 U	0.30 J	0.20 J	3.00	5.00	270.00
1,1-Dichloroethane	1600.00 D	0.40	0.90	0.20 U	0.20 U	0.20 U	0.40	0.60	0.02 J	0.20 U	7.00
1,2-Dichloroethene	720.00 D	0.30 U	1.00 DJ	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	9.00
Chloroform	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	1.00	4.00
1,2-Dichloroethane	39.00	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.20 J	3.00
2-Butanone	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00
1,1,1-Trichloroethane	5300.00 D	38.00	200.00 D	0.30 U	0.30 U	0.30 U	10.00	1.00	37.00	94.00 D	1000.00
Bromodichloromethane	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.10 J	0.30
1,2-Dichloropropane	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40
Trichloroethene	300.00 D	2.00	16.00 D	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.40	0.30 U	260.00
1,1,2-Trichloroethane	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	7.00
Benzene	85.00 E	0.20 J	1.00 DJ	0.20 U	0.20 U	0.20 U	2.00	0.20 U	0.20 U	0.05 J	0.40
2-Hexanone	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00
Tetrachloroethene	380.00 D	5.00	20.00	0.40	0.20 U	0.20 U	0.20 U	0.20 U	0.50	1.00	120.00
Toluene	1900.00 EX	0.40	0.20 J	0.30 U	1.00 B	0.30 U	0.30 U	3.00 B	0.10 J	0.50 DJ	0.07
Ethylbenzene	2.00	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20
Styrene	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40
Xylene (total)	52.00	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.005 J	0.50

Concentration in micrograms per liter
J=estimated detection at or below CRQL
B=analyte detected in laboratory/field blank
D=sample diluted prior to analysis
U=analyte not detected at or above CRQL
E=estimated detection above CRQL
X=calculation performed manually
DIL=dilution
REAN=reanalysis

Table 1: (continued)

WELL LOCATION	MW-28A	MW-28B	MW-29	MW-31	MW-31A	MW-32	MW-33	MW-34	MW-35
ANALYTES									
Vinyl Chloride	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U
Chloroethane	0.30 U	0.30 U	0.30 U	0.05 J	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U
Methylene Chloride	0.60 U	0.60 U	0.60 U	0.20 BJ	0.30 BJ	0.70 B	0.20 J	0.30 BJ	0.40 J
Acetone	2.00 U	2.00 U	2.00 U	0.60 BJ	3.00 B	4.00 B	2.00 U	3.00 B	5.00 B
Carbon Disulfide	0.40 U	0.40 U	0.40 U	0.05 BJ	0.10 BJ	0.40 U	0.40 U	0.40 U	0.07 BJ
1,1-Dichloroethene	0.30 U	0.30 J	0.20 J	3.00	5.00	270.00 D	0.40	0.30 J	4.00
1,1-Dichloroethane	0.20 U	0.40	0.60	0.02 J	0.20 U	7.00	0.20 U	3.00	10.00
1,2-Dichloroethene	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	9.00 X	0.30 U	0.03 J	0.60 X
Chloroform	0.30 U	0.30 U	0.30 U	0.30 U	1.00	4.00	0.30 U	0.08 J	0.30
1,2-Dichloroethane	0.70 U	0.70 U	0.70 U	0.70 U	0.20 J	3.00	0.70 U	0.01 J	0.30 J
2-Butanone	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
1,1,1-Trichloroethane	0.30 U	10.00	1.00	37.00	94.00 D	1000.00 D	3.00	14.00	44.00
Bromodichloromethane	0.30 U	0.30 U	0.30 U	0.30 U	0.10 J	0.30 U	0.30 U	0.30 U	0.30 U
1,2-Dichloropropane	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Trichloroethene	0.30 U	0.30 U	0.30 U	0.40	0.30 U	260.00 D	0.70	1.00	0.20 J
1,1,2-Trichloroethane	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	7.00	0.60 U	0.60 U	0.20 J
Benzene	0.20 U	2.00	0.20 U	0.20 U	0.05 J	0.40	0.20 U	1.00	0.009 J
2-Hexanone	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
Tetrachloroethene	0.20 U	0.20 U	0.20 U	0.50	1.00	120.00	0.40	0.20 U	0.20 J
Toluene	0.30 U	0.30 U	3.00 B	0.10 J	0.50 DJ	0.07 BJ	0.03 BJ	0.08 BJ	0.20 J
Ethylbenzene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Styrene	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Xylene (total)	0.50 U	0.50 U	0.50 U	0.50 U	0.005 J	0.50 U	0.50 U	0.008 J	0.50 U

Concentration in micrograms per liter
J=estimated detection at or below CRQL
B=analyte detected in laboratory/field blank
D=sample diluted prior to analysis
U=analyte not detected at or above CRQL
E=estimated detection above CRQL
X=calculation performed manually
DIL=dilution
REAN=reanalysis

Table 2: Summary of Volatile Organic Analyses Data March 1990

WELL LOCATION	MW-1	MW-5	MW-7	MW-8	MW-9	MW-10	MW-15	MW-16	MW-17	MW-18	MW-19	MW-21	MW-22
ANALYTES													
1,1,1-Trichloroethane	27.0	3900.0 DJ	0.9 U	2.0	420.0 DJ	180.0 DJ	160.0 DJ	0.9 U	0.9 U	0.9 U	0.9 U	18.0	0.9 U
1,1,2-Trichloroethane	0.3 U	10.0	0.3 U	0.3 U	2.0	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1-Dichloroethane	0.2 U	940.0 DJ	0.2 U	0.2 U	3.0	0.5	110.0 DJ	0.2 U	0.2 U	0.2 U	0.3	3.0	0.2 U
1,1-Dichloroethylene	12.0	620.0 DJ	0.3 U	0.3 U	67.0 DJ	37.0	14.0	0.3 U	0.3 U	0.3 U	0.3 U	1.0	0.3 U
1,2-Dichloroethane	0.2 U	14.0	0.2 U	0.2 U	2.0	0.2 U	0.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethene (total)	0.2 J	370.0 DJ	0.2 U	0.2 U	4.0	1.0	3.0	0.2 U	0.2 U	0.2 U	0.2 U	0.5	0.2 U
1,2-Dichloropropane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
2-Butanone	5.0 UR	120.0 EJ	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR
2-Hexanone	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	8.0 UBJ	24.0 UBJ	8.0 UBJ	9.0 UBJ	3.0 UBJ	5.0 UBJ	9.0 UBJ	1.0 UBXJ	0.7 UBJ	4.0 UBJ	5.0 UBJ	4.0 UBJ	2.0 UBJ
Benzene	0.2 UJ	29.0 J	0.2 UJ	0.2 UJ	0.2 J	0.2 UJ	0.1 J	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.4 J	0.2 UJ
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Carbon disulfide	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.1 BJ	0.3 U
Chloroethane	0.9 U	12.0	0.9 U	0.9 U	0.9 U	0.9 U	0.9 J	0.9 U	0.9 U	0.9 U	0.9 U	0.3 J	0.9 U
Chloroform	0.3 U	2.0	0.3 U	0 3 U	0.2 J	0.2 J	1.0	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Ethylbenzene	0.2 UJ	0.2 UJ	0.2 UJ	0 2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
Methylene chloride	0.7 UBJ	380.0 BE	0.7 UBJ	0.7 UBJ	4.0 UB	0.7 UBJ	1.0 UBY	1.0 UB	0.5 UBJ	0.4 UBJ	0.9 UB	0.7 UBJ	0.8 UB
Styrene	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ
Tetrachloroethene	0.3	270.0 DJ	0.3 U	0.3 U	48.0	15.0	0.7	0.3 U	0.3 U	0.3 U	0.3 U	0.1 J	0.1 J
Toluene	0.1 J	77.0 BDJ	0.2 UJ	0.1 J	1.0 J	0.2 J	2.0 BJ	0.1 UBJ	0.2 UBJ	0.2 J	0.2 UBJ	0.1 UBJ	0.2 UBJ
Total xylenes	0.3 UJ	17.0 DJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ
Trichloroethene	1.0	190.0 DJ	0.2 U	0.2 U	45.0 DJ	12.0	4.0	0.2 U	0.2 U	0.2 U	0.2 U	0.8	0.6
Vinyl chloride	0.4 U	0.3 J	0.4 U	0.4 U	0.4 U	0.4 U	0.2 J	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U

Table 2: Summary of Volatile Organic Analyses Data March 1990

WELL LOCATION	MW-23	MW-25	MW-26	MW-27	MW-28	MW-28A	MW-28B	MW-29	MW-32	MW-31A	MW-32	MW-33	MW-34
ANALYTES													
1,1,1-Trichloroethane	1200.0 DJ	57.0 DJ	180.0 DJ	0.9 U	0.9 U	12.0	0.9 U	1.0	110.0	350.0	1200.0 DJ	0.6 J	14.0
1,1,2-Trichloroethane	5.0	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	1.0 U	3.0 U	5.0	0.3 U	0.3 U
1,1-Dichloroethane	5.0	0.3	0.5	0.2 U	0.2 U	0.4	0.2 U	0.4	1.0 U	3.0 U	5.0	0.6	2.0
1,1-Dichloroethylene	300.0 DJ	8.0 Y	40.0	0.3 U	0.3 U	0.3	0.3 U	0.2 J	4.0	7.0	300.0 DJ	0.3	0.2 J
1,2-Dichloroethane	3.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.9 U	2.0 U	3.0	0.2 U	0.2 U
1,2-Dichloroethene (total)	7.0	0.2 J	1.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	1.0 U	3.0 U	7.0	0.2 U	0.1 J
1,2-Dichloropropane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	2.0 U	4.0 U	0.3 U	0.3 U	0.3 U
2-Butanone	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	5.0 UR	25.0 UR	63.0 UR	5.0 UR	5.0 UR	5.0 UR
2-Hexanone	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.0 U	6.0 U	0.5 U	0.5 U	0.5 U
Acetone	0.7 UBJ	4.0 UBJ	4.0 UBJ	6.0 UBJ	0.7 UBJ	0.8 UBXJ	1.0 UBJ	2.0 UBJ	44.0 BJ	92.0 BJ	0.7 UBJ	11.0 UBJ	4.0 UBJ
Benzene	0.3 J	0.2 UJ	0.2 UJ	0.2 U	0.2 UJ	0.2 J	0.2 UJ	0.2 UJ	1.0 UJ	3.0 UJ	0.3 J	0.1 J	0.2 J
Bromodichloromethane	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	1.0 U	3.0 U	0.3 U	0.3 U	0.3 U
Carbon disulfide	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	1.0 U	3.0 U	0.3 U	0.1 BJ	0.3 U
Chloroethane	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	5.0 U	12.0 U	0.9 U	0.1 J	0.9 U
Chloroform	0.5	0.3 U	0.3 U	0.3 U	0.3	0.3 U	0.3 U	0.1 J	1.0 U	3.0 U	0.4	0.0 J	0.0 J
Ethylbenzene	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.8 UJ	2.0 UJ	0.2 UJ	0.1 J	0.2 UJ
Methylene chloride	0.6 UBJ	2.0 BY	0.8 UB	0.6 UBJ	0.8 UB	0.5 UBJ	0.8 UB	1.0 UB	4.0 UB	14.0 B	0.6 UBJ	0.9 UB	0.9 UB
Styrene	0.3 UJ	0.3 UJ	0.3 UJ	0.3 U	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	1.0 UJ	3.0 UJ	0.3 UJ	0.3 UJ	0.3 UJ
Tetrachloroethene	120.0 DJ	5.0 Y	21.0	0.4	0.1 J	0.3 U	0.3 U	0.1 J	2.0	3.0 U	120.0 DJ	0.1 J	0.3 U
Toluene	0.1 YJ	0.1 UBJ	0.2 UBJ	0.1 UBJ	0.1 UBJ	0.2 UJ	0.2 UBJ	0.1 UBJ	0.5 YJ	2.0 J	0.1 YJ	0.4 UBJ	0.3 UBJ
Total xylenes	0.3 UJ	0.3 UJ	0.3 UJ	0.3 U	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	1.0 UJ	3.0 UJ	0.3 UJ	0.6 XJ	0.3 UJ
Trichloroethene	280.0 DJ	3.0 Y	13.0	0.2 U	0.1 J	0.2 U	0.2 J	0.2 U	1.0 U	3.0 U	260.0 DJ	0.5	1.0
Vinyl chloride	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	2.0 U	5.0 U	0.4 U	0.4 U	0.4 U

Table 2: Summary of Volatile Organic Analyses Data March 1990

WELL LOCATION MW-35

ANALYTES	
1,1,1-Trichloroethane	69.0
1,1,2-Trichloroethane	0.5 U
1,1-Dichloroethane	9.0
1,1-Dichloroethylene	6.0
1,2-Dichloroethane	0.4 U
1,2-Dichloroethene (total)	0.6
1,2-Dichloropropane	0.6 U
2-Butanone	10.0 UR
2-Hexanone	1.0 U
Acetone	17.0 UBJ
Benzene	0.5 UJ
Bromodichloromethane	0.6 U
Carbon disulfide	0.5 U
Chloroethane	0.8 J
Chloroform	0.5 U
Ethylbenzene	0.3 UJ
Methylene chloride	7.0 B
Styrene	0.5 UJ
Tetrachloroethene	0.4 J
Toluene	0.2 J
Total xylenes	0.5 UJ
Trichloroethene	0.4 U
Vinyl chloride	0.8 U

U : Analyte not detected; reported concentration is the method detection limit

UB: Analyte not detected; analyte is present in laboratory blank at >0.2 times the reported sample concentration (>0.1 times for acetone, methylene chloride, and toluene)

B : Analyte detected, but is present in the laboratory blank at < 0.2 times the reported sample concentration (<0.1 times for acetone, methylene chloride, and toluene

J : Reported concentration or nondetect is an estimated result

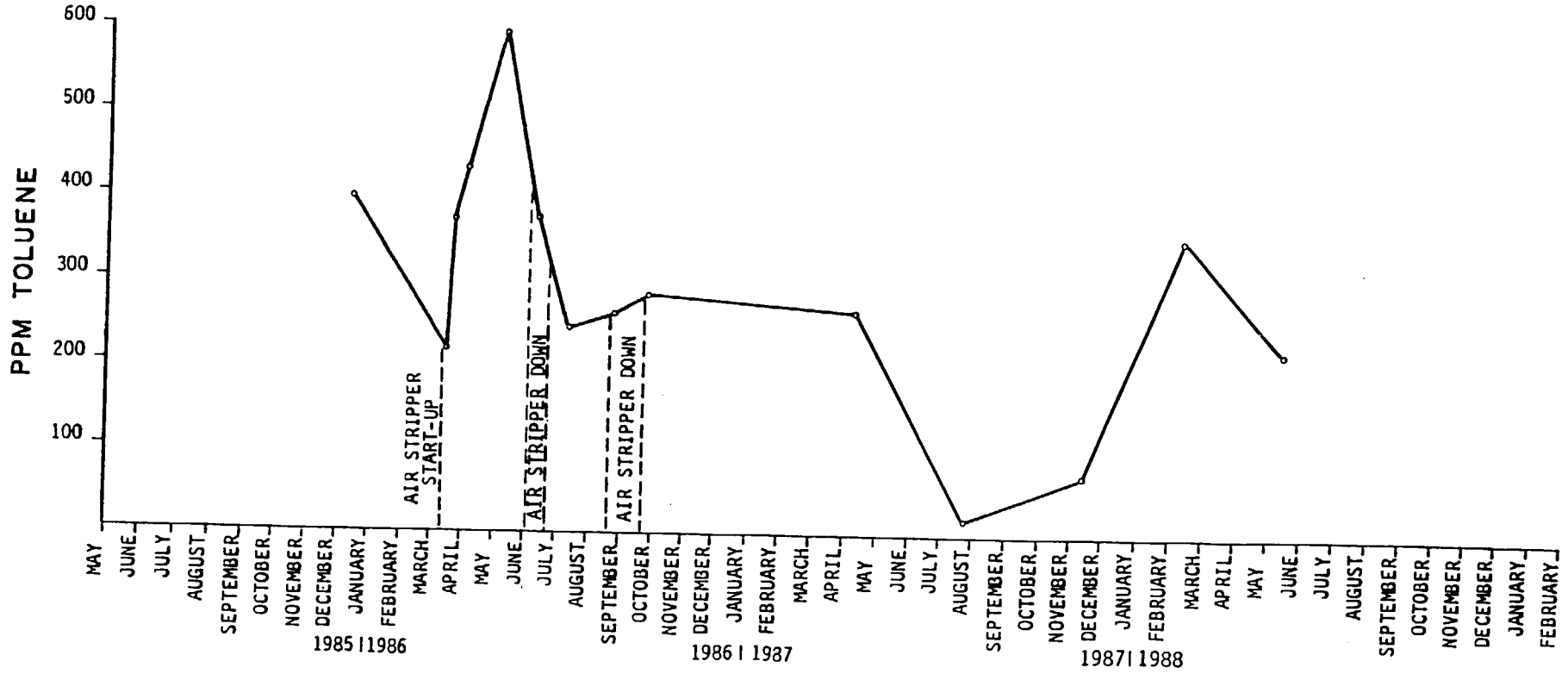
D : Sample diluted prior to analysis

E : Reported concentration exceeded instrument calibration range and is approximate

X : Calculation performed manually

Y : Analyte present in an associated field QC blank at > 0.2 times the reported sample concentration (> 0.1 times for acetone, methylene Chloride, and toluene)

MW 4A

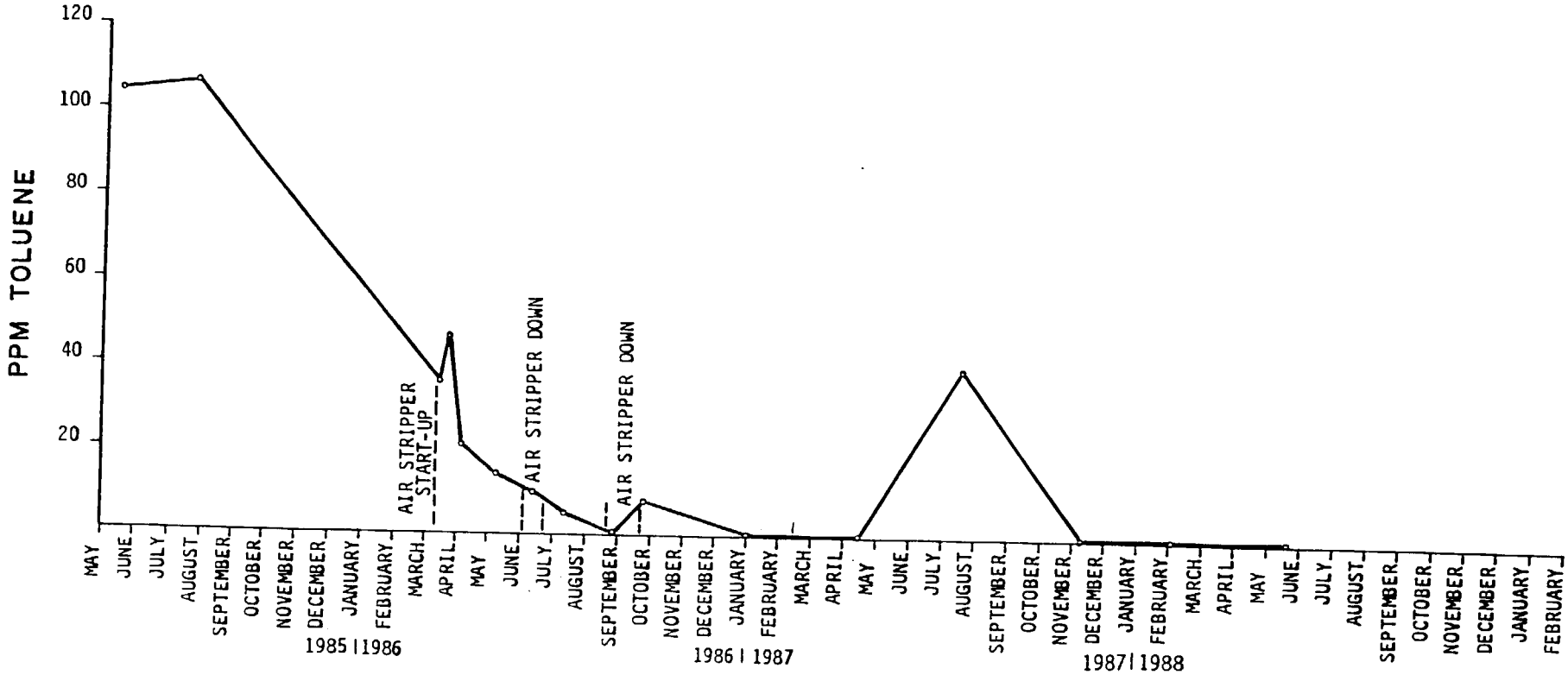


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW 5

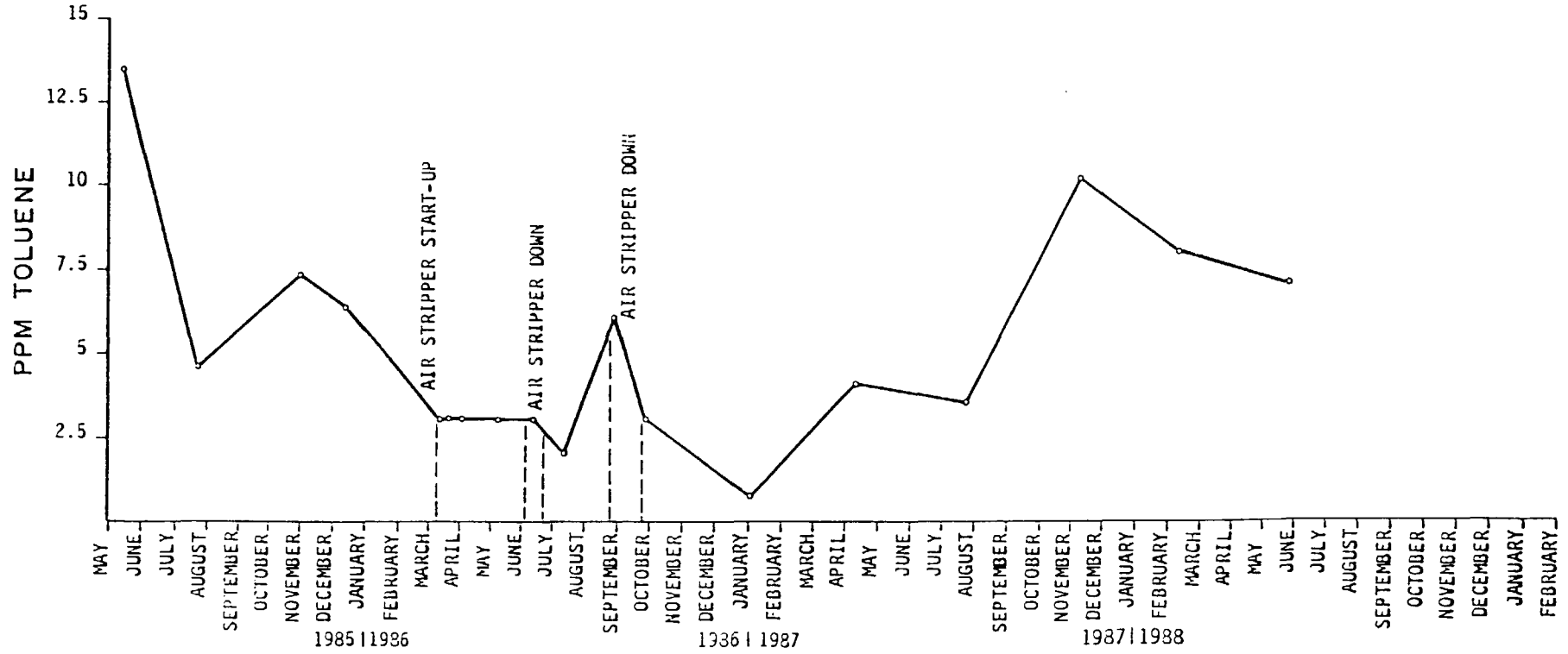


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW 15

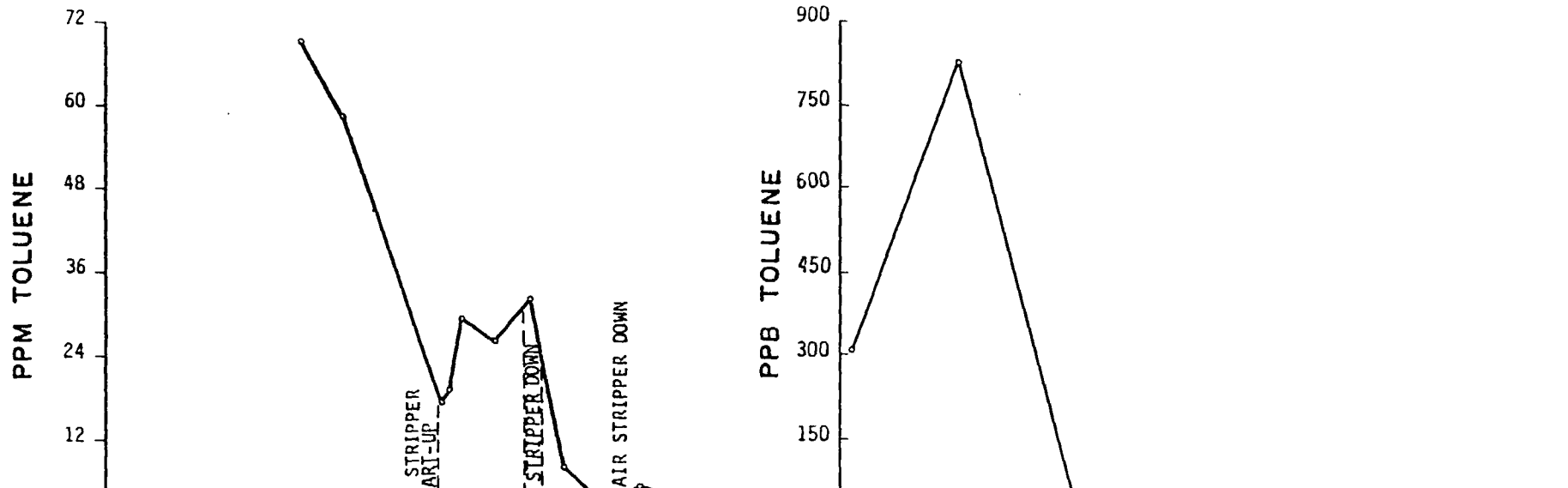


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815 235-7643 61032-5098

MW 24

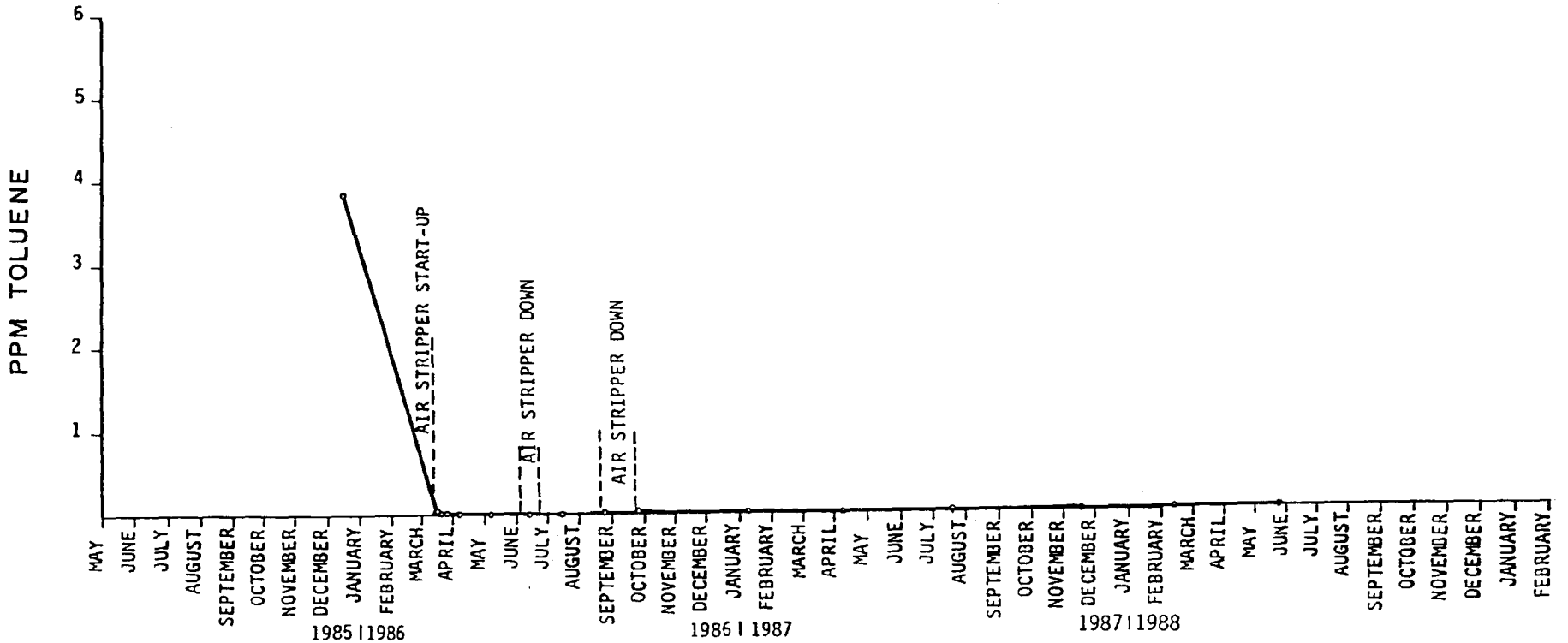


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643

MW 25

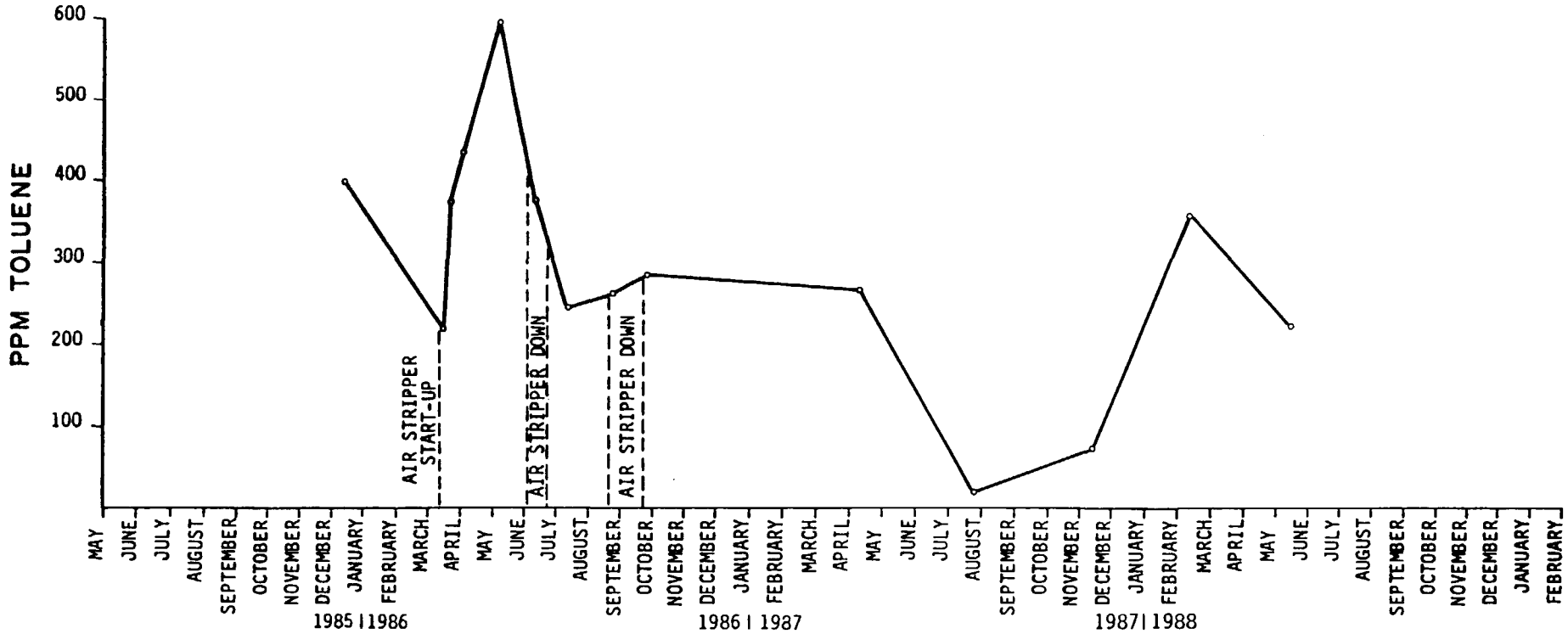


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW 4A

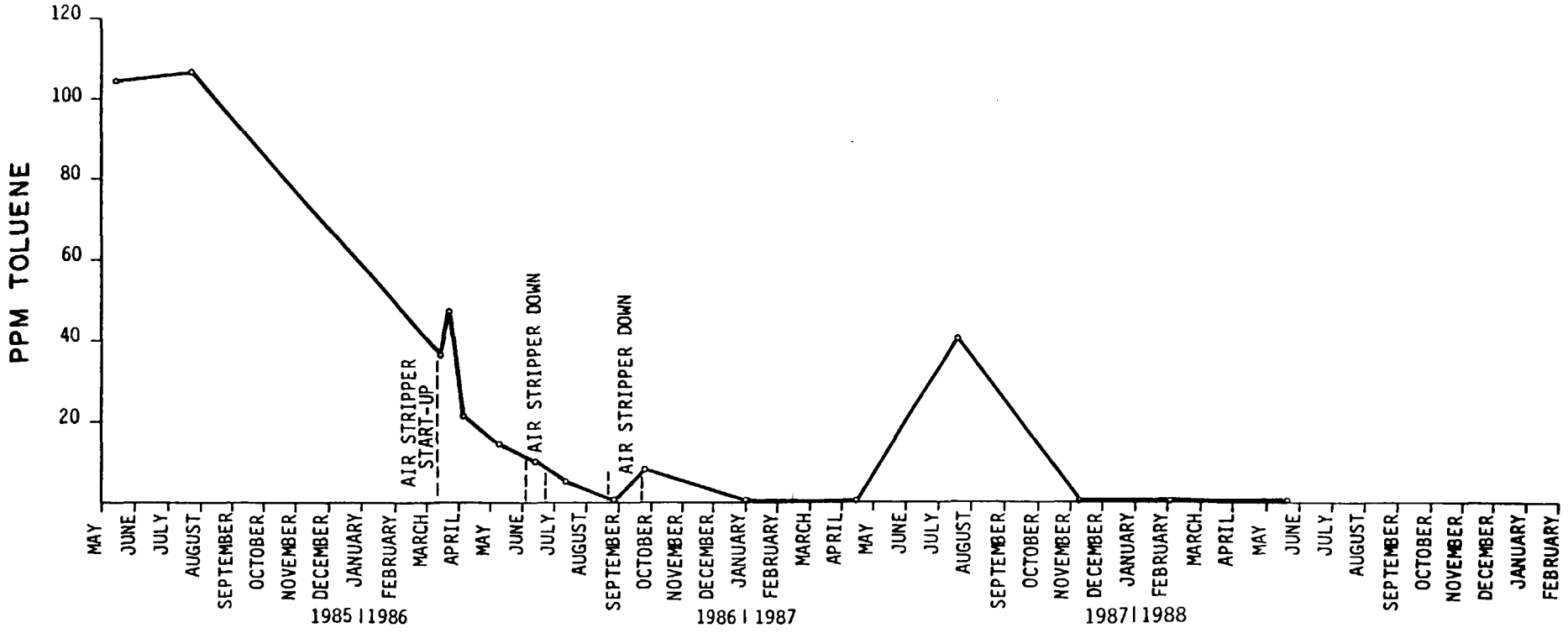


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW 5

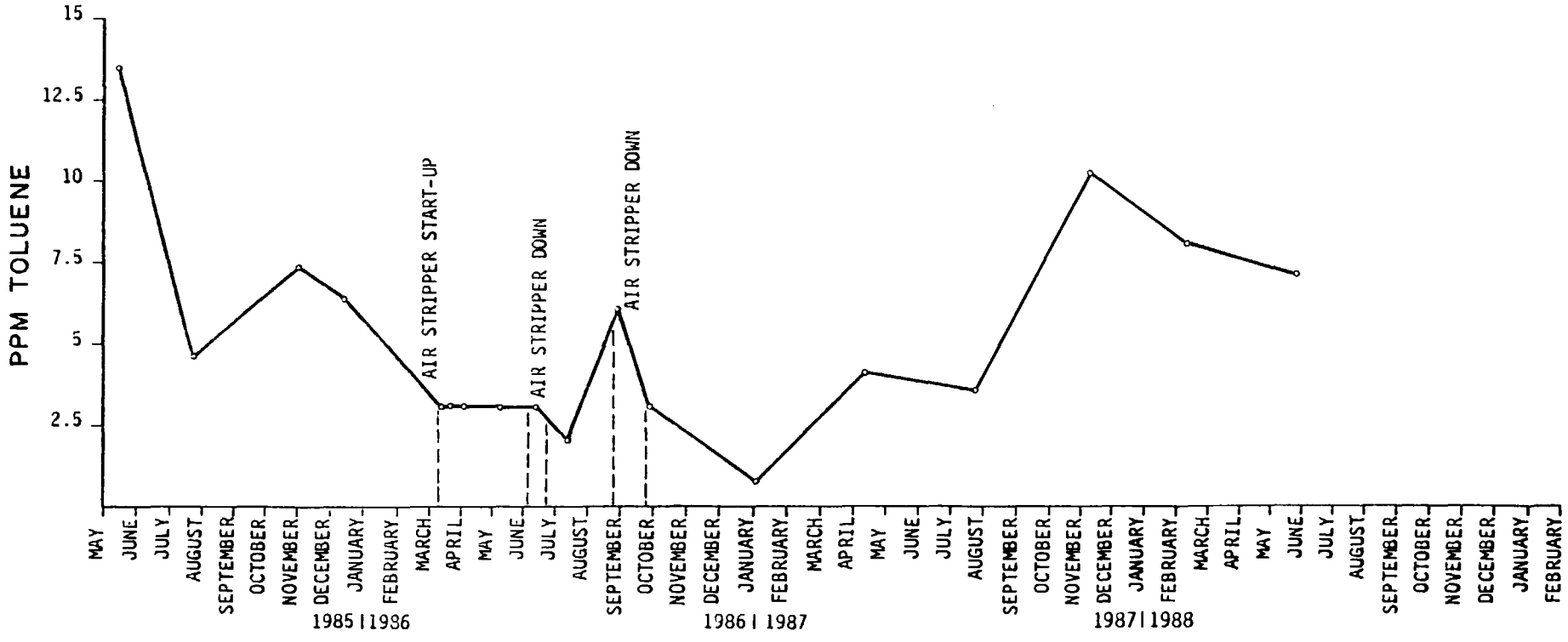


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW 15

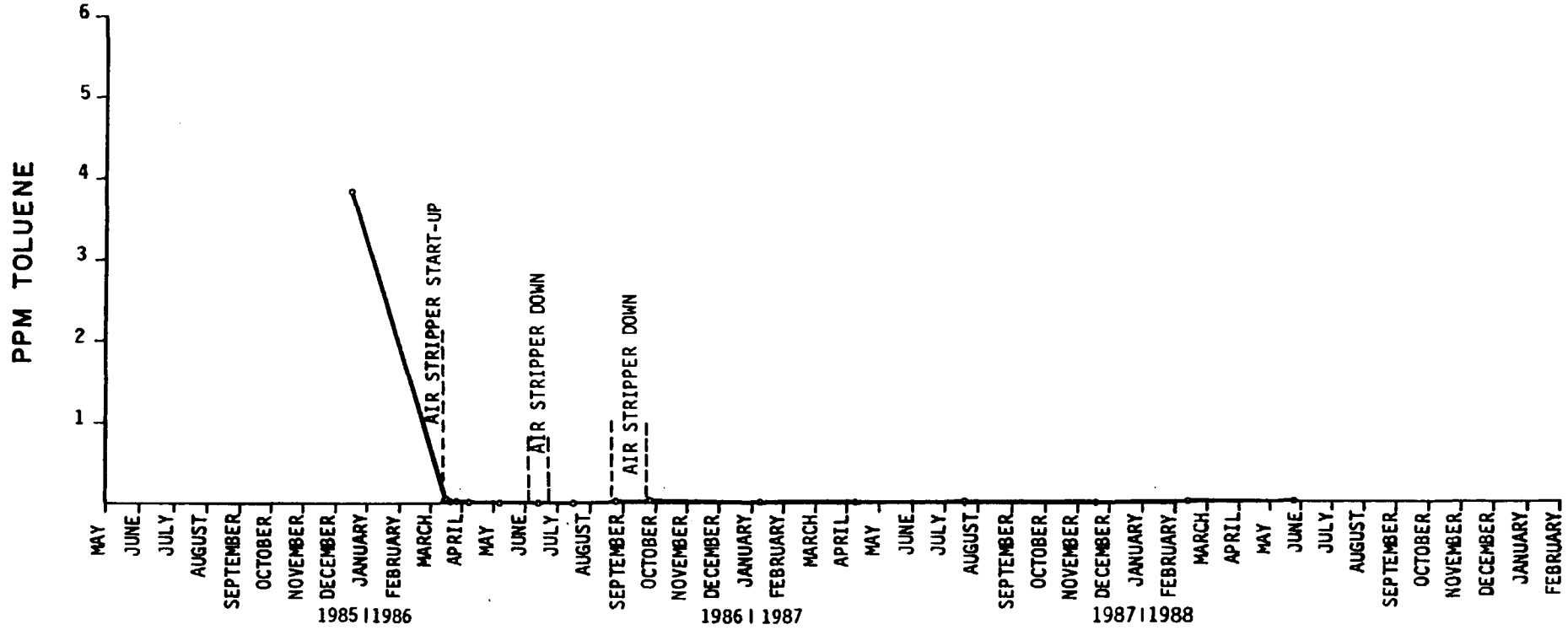


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW _5

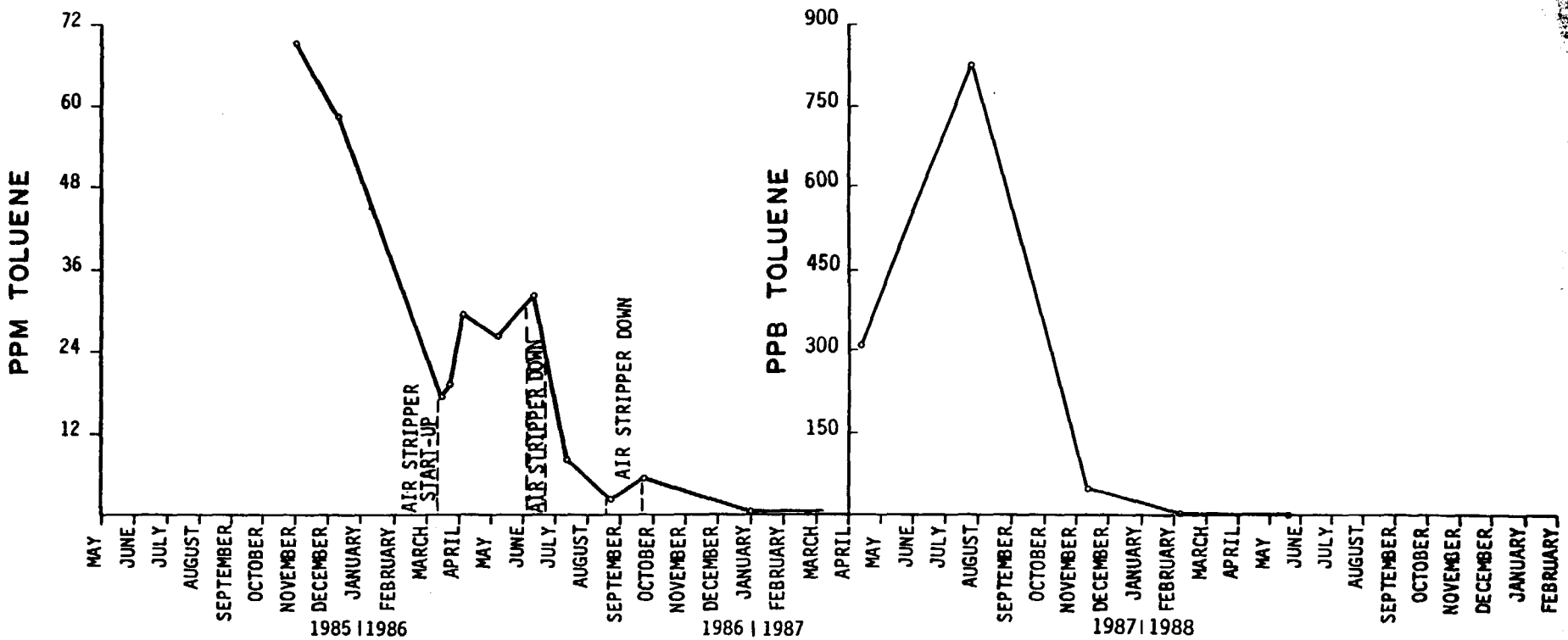


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW 24



SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

7/27/89

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MONITORING WELL NO. 24

SAMPLE RESULTS

PROJECT Sani Ostrand JOB NO. 26143

BOTTOM ELEVATION 768.6 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	804.01	802.76	803.14	803.20	804.03	807.79
Toluene	17ppm	19 ppm	5ppm*	29 ppm	26 ppm	32ppm
Temperature °F	53.0	52.3	52.8	53.7	54.0	55.2
	7/11/86	8/25/86*4	9/25/86	1/8/87	4/9/87	7/21/87
water level	802.99	804.38	801.67	802.35	800.54	801.05
Toluene.	8ppm	2ppm	5ppm	128ppb	307ppb	820ppb
Temperature °F	55.0	54.5	55.1	51.0	53.8	55.2
	11/10/87	2/11/88	5/25/88			
water level	804.77	804.57	803.15			
Toluene.	47ppb	8.6ppm	<1ppb			
Temperature °F	52.9	50.1	54.6			

*False reading

**Measurements Down

MONITORING WELL NO. 25

SAMPLE RESULTS

PROJECT Sand Ostrand JOB NO. 26143

BOTTOM ELEVATION 706.3 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	805.46	804.45	804.50	804.75	804.62	807.32
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	52.3	51.0	51.2	52.8	53.0	54.5
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	803.43	803.07	802.44	802.48	800.09	800.45
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	54.1	53.9	54.8	50.9°	53.0	54.5
	11/10/87	2/1/88	5/25/88			
water level	801.15	805.46	803.17			
toluene	<1ppb	<1ppb	<1ppb			
temperature °F	51.9	50.4	53.5			
** Air stripper down						

MONITORING WELL NO. 15

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 26143

BOTTOM ELEVATION 793.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/24/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	808.80	804.99	805.08	805.45	805.48	809.50
toluene	3 ppm	3ppm	2ppm*	3ppm	3ppm	3ppm
temperature °F	53.0	52.8	53.8	55.1	58.0	58.0
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	804.67	804.38	804.13	803.90	801.87	803.07
toluene	2ppm	6ppm	3ppm	76 ppb	4.2ppm	3.5ppm
temperature °F	59.3	58.0	64.5	49.5	—	61.8
	11/4/87	2/1/88	5/25/88			
water level	803.47	803.98	805.09			
toluene	0.2ppm	8.1ppm	7ppm			
temperature °F	52.5	—	56.9			
*false reading						

**Air stripper down

MONITORING WELL NO. 5

SAMPLE RESULTS

PROJECT Sunlestsand JOB NO. 16143

BOTTOM ELEVATION 778.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/25/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	807.49	804.62	804.75	805.08	805.01	809.71
toluene	36 ppm	47 ppm	6 ppm*	21 ppm	14 ppm	10 ppm
temperature °F	54.8	53.4	55.1	55.2	56.3	56.9
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	804.59	804.80	803.22	803.23	800.15	801.69
toluene	5 ppm	584 ppb	8 ppm	52 ppb	252 ppb	404 ppb
temperature °F	57.7	56.6	57.2	53.8	56.5	58.8
	11/10/87	2/1/88	5/25/88			
water level	802.43	801.42	804.58			
toluene	22 ppb	12 ppb	10 ppb			
temperature °F	—	—	57.0			

*false reading

**Air stripper down

MONITORING WELL NO. 4A

SAMPLE RESULTS

PROJECT Sunstrand JOB NO. 26143.

BOTTOM ELEVATION 805.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/24/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	813.89	812.85	813.49	814.51	815.28	816.64
toluene	218 ppm	372 ppm	22 ppm*	433 ppm	591 ppm	372 ppm
temperature °F	53.5	53.0	55.1	55.2	57.5	59.2
	7/11/86	8/25/86**	9/25/86	1/8/87***	boiler 4/9/87	7/21/87*
water level	814.26	813.76	815.77	812.01	806.60	810.39
toluene	241 ppm	260 ppm	283 ppm	—	272 ppm	20.2 ppm
temperature °F	—	61.9	61.2	—	—	—
	11/10/87	2/1/88	5/25/88			
water level	814.34	813.93	814.77			
toluene	73.9 ppm	35.6 ppm	22.3 ppm			
temperature °F	—	—	57.7			

*Full scan

** Air stripper down

***

MONITORING WELL NO. 10

SAMPLE RESULTS

PROJECT Sunoco JOB NO. 26143

BOTTOM ELEVATION 757.85 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	807.37	806.50	806.68	806.54	805.71	806.79
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	51.0	48.8	49.0	51.7	52.5	54.0
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	805.69	804.64	804.47	804.70	802.44	802.00
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	57.1	54.4	55.4	50.0	52.4	55.0
	11/4/87	2/11/88	5/25/88			
water level	803.74	804.71	805.79			
toluene	<1ppb	<1ppb	<1ppb			
temperature °F	51.1	—	53.1			
** Air stripper down						

MONITORING WELL NO. 26

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 26143

BOTTOM ELEVATION 749.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	**6/10/86
water level	806.07	804.95	805.06	805.32	804.94	806.94
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	52.1	51.8	51.9	52.8	53.2	54.7
	7/11/86	**8/25/86	9/25/86	1/8/87	4/9/87	7/21/87
water level	804.20	804.60	803.11	803.34	801.09	801.13
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	54.8	53.6	55.8°	48.2°	53.1	54.8
	11/10/87	2/1/88	5/25/88			
water level	803.27	804.50	803.97			
toluene	<1ppb	<1ppb	<1ppb			
temperature °F	51.2	49.5	—			
**Air slipper down						

MONITORING WELL NO. 4A

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 26143.

BOTTOM ELEVATION 805.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/28/86	3/27/86	4/3/86	5/7/86	6/11/86
water level	813.89	812.85	813.49	814.51	815.28	816.64
toluene	218 ppm	372 ppm	22 ppm*	433 ppm	591 ppm	372 ppm
Temperature °F	53.5	53.0	55.1	55.2	57.6	59.2
	7/11/86	9/25/86**	9/25/86	1/8/87***	4/9/87 boiler	7/21/87
water level	814.26	813.76	815.77	812.01	806.62	810.39
toluene	241 ppm	260 ppm	283 ppm	—	272 ppm	20.7 ppm
temperature °F	—	61.9	61.2	—	—	—
	11/12/87	2/1/88				
water level	814.34	813.93				
toluene	73.9 ppm	35.1 ppm				
temperature °F	—	—				

MONITORING WELL NO. 10

SAMPLE RESULTS

PROJECT Sunoco Station JOB NO. 26143

BOTTOM ELEVATION 757.85 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	807.37	806.50	806.68	806.54	805.71	806.79
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	51.0	48.8	49.0	51.7	52.5	54.0
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	805.69	804.64	804.47	804.30	803.44	803.66
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	57.1	54.4	55.4	50.0	52.4	55.0
	11/4/87	2/1/88				
water level	803.74	804.71				
toluene	<1ppb	<1ppb				
temperature °F	51.1	—				
** Air stripper down						

MONITORING WELL NO. 26

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 26143

BOTTOM ELEVATION 749.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/96	3/20/96	3/27/96	4/3/96	5/7/96	6/10/96**
water level	806.07	804.95	805.00	805.52	804.94	806.94
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
Temperature °F	52.1	51.8	51.9	52.8	53.2	54.7
	7/11/96	8/12/96**	9/23/96	1/21/97	4/9/97	7/21/97
water level	804.20	804.60	803.11	803.34	801.09	801.13
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
Temperature °F	54.8	53.6	55.8°	48.2°	53.1	54.8
	11/6/97	2/11/98				
water level	803.27	801.50				
toluene	<1ppb	<1ppb				
temperature °F	51.2	49.5				
** Air stripper down						

MONITORING WELL NO. 25

SAMPLE RESULTS

PROJECT Sun Ostrand JOB NO. 26143

BOTTOM ELEVATION 706.3 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	805.46	804.45	804.50	804.75	8.44	8.732
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	52.3	51.0	51.2	52.8	53.0	54.5
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	803.43	803.07	802.49	802.49	800.09	800.45
Toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	54.1	53.9	54.8	50.9°	53.0	54.5
	11/10/87	2/1/88				
water level	802.15	805.46				
toluene	<1ppb	<1ppb				
temperature °F	51.9	50.4				
** A.C. shut off [illegible]						

MONITORING WELL NO. 24

SAMPLE RESULTS

PROJECT Sand Strand JOB NO. 26143

BOTTOM ELEVATION 768.6 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	804.01	802.76	803.14	803.20	804.03	807.79
Toluene	17ppm	19 ppm	5ppm*	29 ppm	26ppm	32ppm
Temperature °F	53.6	52.3	52.8	53.7	54.0	55.2
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	802.99	804.38	801.67	802.35	800.54	801.05
Toluene	8ppm	2ppm	5 ppm	128ppb	307ppb	82cppb
Temperature °F	55.0	54.5	55.1	51.0	53.8	55.2
	11/10/87	2/11/88				
water level	801.77	801.57				
Toluene	47ppm	5.6ppm				
Temperature °F	52.9	50.1				
*False Sampling						

**

MONITORING WELL NO. 15

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 26143

BOTTOM ELEVATION 793.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/24/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	808.80	804.99	805.08	805.45	805.49	809.50
toluene	3 ppm	3 ppm	2 ppm*	3 ppm	3 ppm	3 ppm
temperature °F	53.0	52.8	53.8	55.1	58.0	58.0
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/31/87
water level	804.67	804.38	804.13	803.90	801.87	803.07
toluene	2 ppm	6 ppm	3 ppm	76 ppb	4.2 ppm	3.5 ppm
temperature °F	59.3	58.0	64.5	49.5	—	61.8
	11/3/87	2/1/88				
water level	803.47	803.96				
toluene	6.2 ppm	8 ppm				
temperature °F	52.5	—				
*Value Not Clear						

MONITORING WELL NO. 5

SAMPLE RESULTS

PROJECT Sunderland JOB NO. 26143

BOTTOM ELEVATION 778.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	807.49	804.62	804.75	805.08	805.61	806.71
Toluene	36 ppm	47 ppm	6 ppm*	21 ppm	14 ppm	10 ppm
Temperature °F	54.8	53.4	55.1	55.2	56.3	56.9
	7/11/86	9/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	804.59	804.80	803.22	803.23	805.15	806.19
Toluene	5 ppm	584 ppb	8 ppm	52 ppb	252 ppb	960 ppb
Temperature °F	57.7	56.6	57.2	53.8	56.5	58.8
	11/10/87	2/1/88				
water level	802.43	804.42				
Toluene	22 ppb	13 ppb				
Temperature °F	—	—				
*False reading						

MONITORING WELL NO. 4A

SAMPLE RESULTS

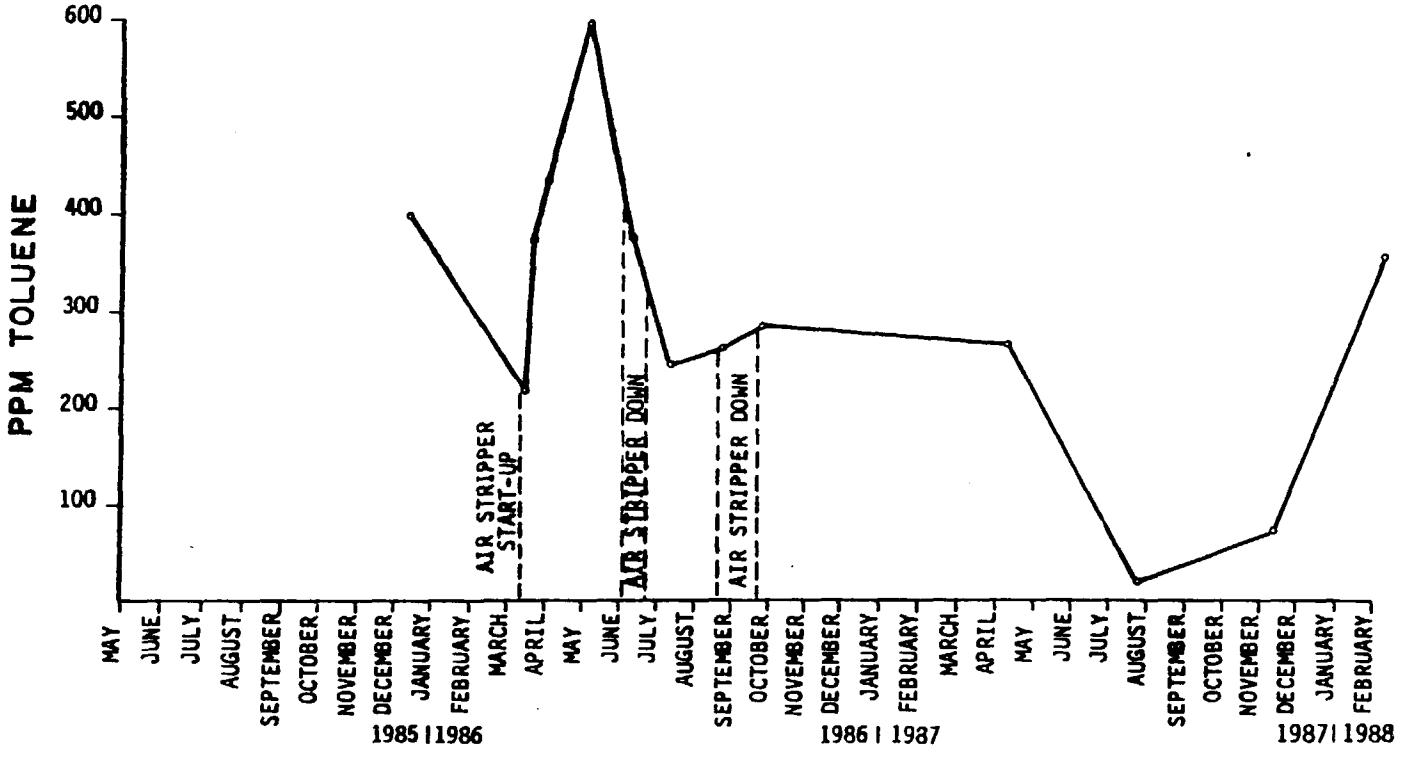
PROJECT Sundstrand JOB NO. 26143

BOTTOM ELEVATION 805.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	** 6/10/86
water level	813.89	812.85	813.49	814.57	815.28	816.64
toluene	218 ppm	372 ppm	22 ppm *	433 ppm	591 ppm	372 ppm
Temperature °F	53.5	53.0	55.1	55.2	57.8	59.2
	7/11/86	** 8/25/86	9/25/86	*** 1/8/87	bailer 4/9/87	7/21/87 *
water level	814.26	813.76	815.77	812.01	806.60	810.39
toluene	241 ppm	260 ppm	283 ppm	—	272 ppm	20.2 ppm
temperature °F	—	61.9	61.2	—	—	—
	11/10/87	2/1/88				
water level	814.34	813.93				
toluene	73.9 ppm	350 ppm				
temperature °F	—	—				
* [illegible]						

** [illegible] *** [illegible]

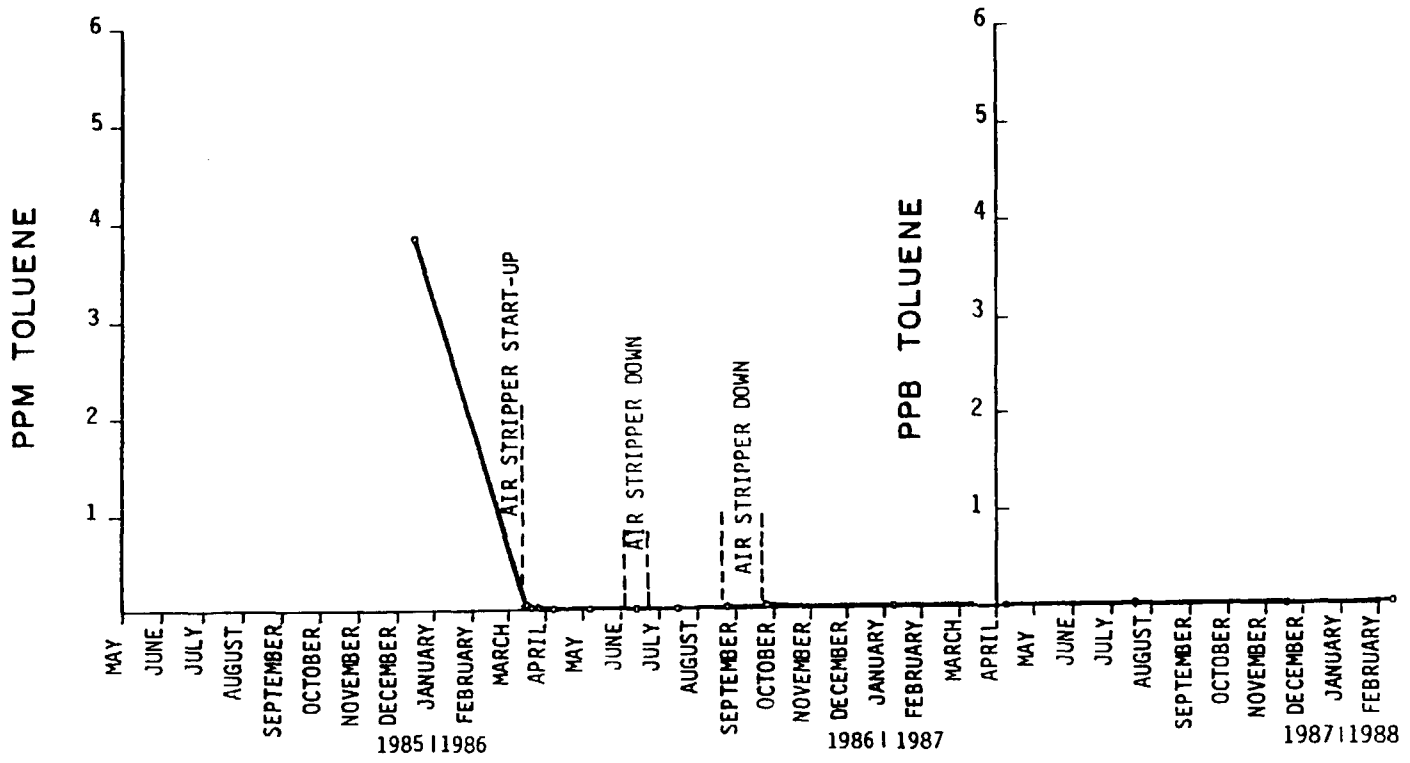
MW 4A



SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

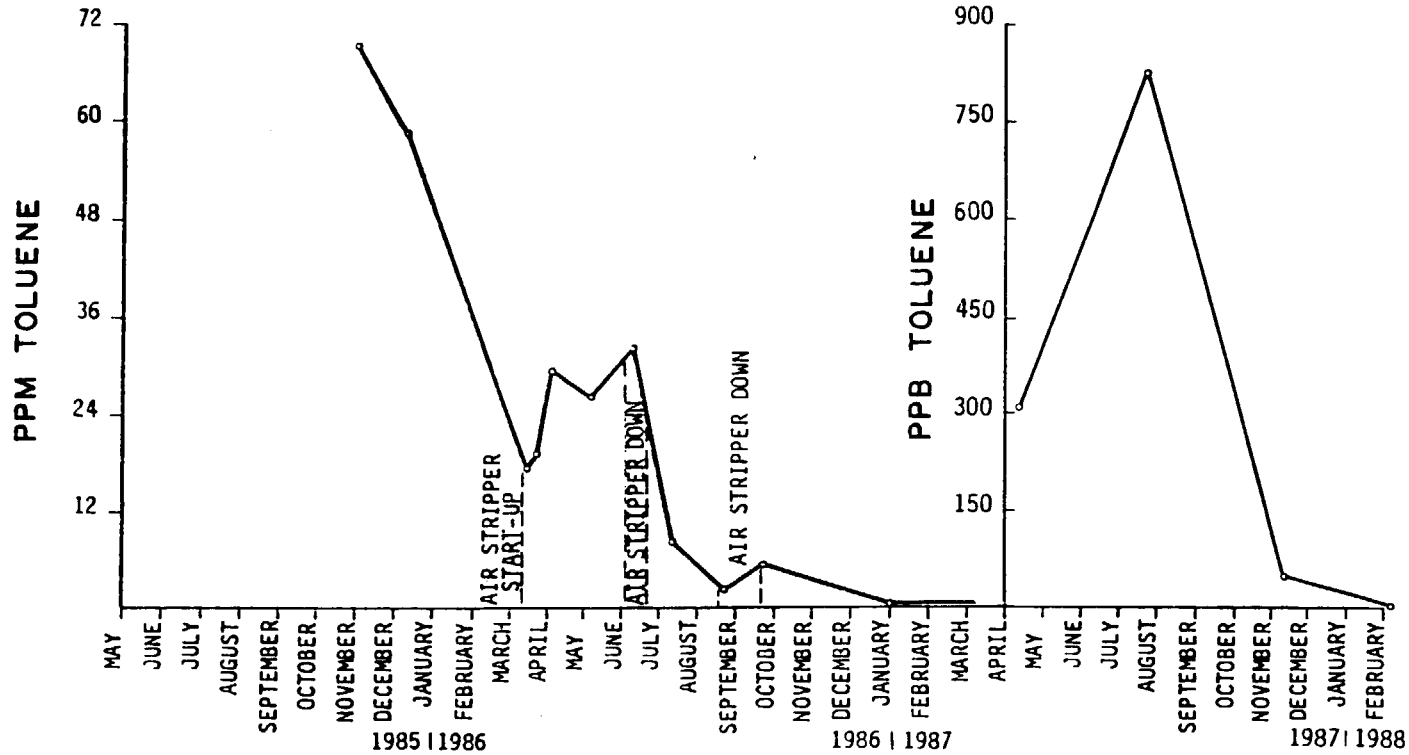


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

4/

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLI
815/235-7643 61032

MW 24

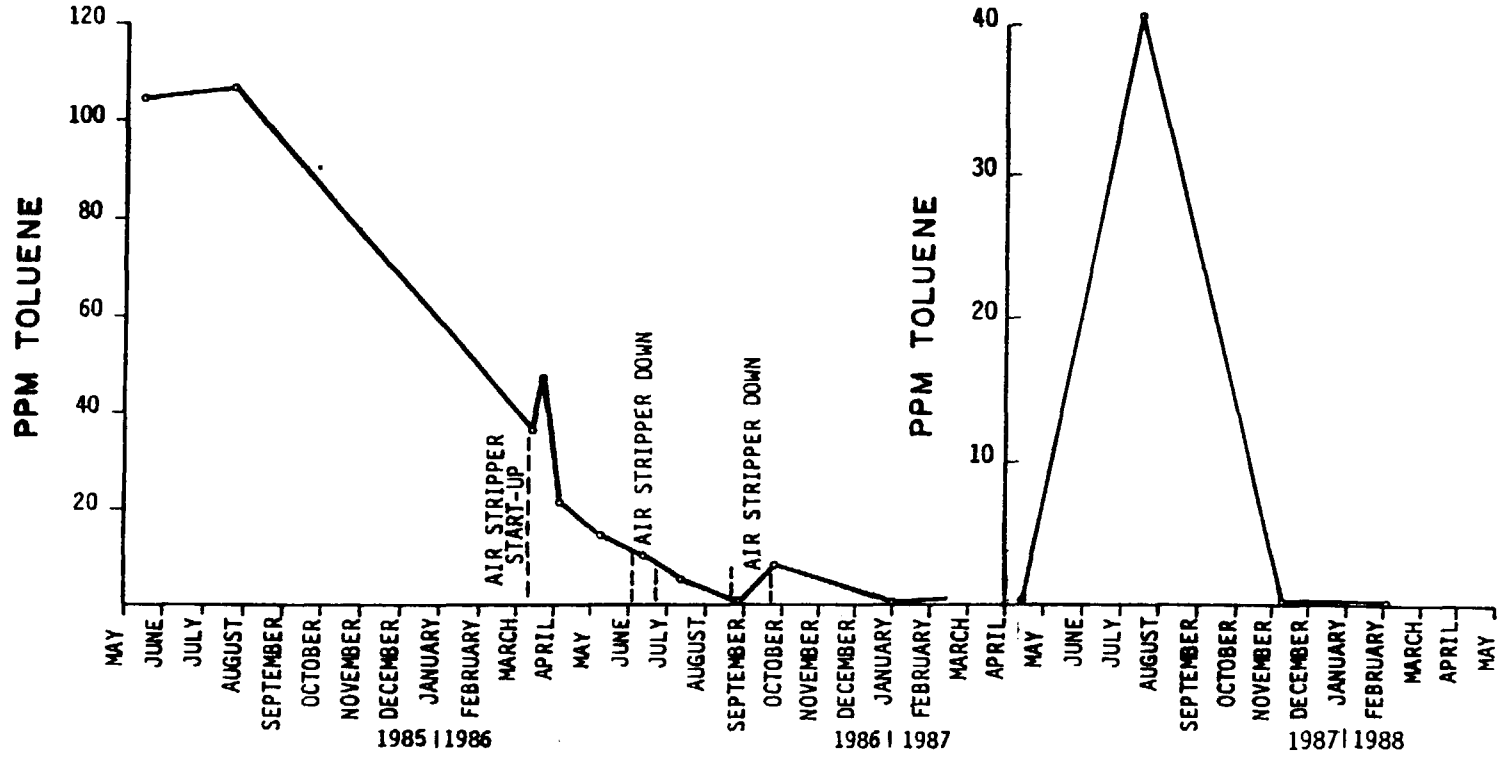


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MW 5

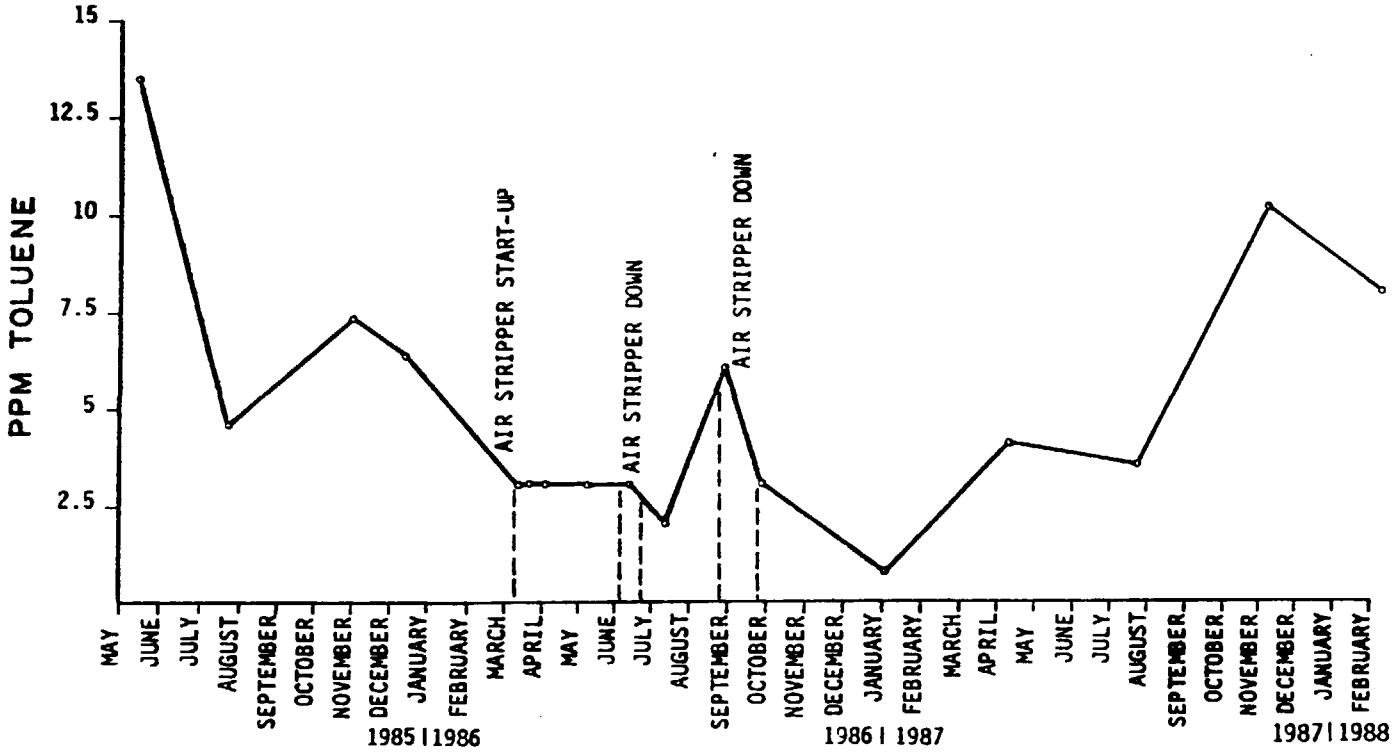


SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

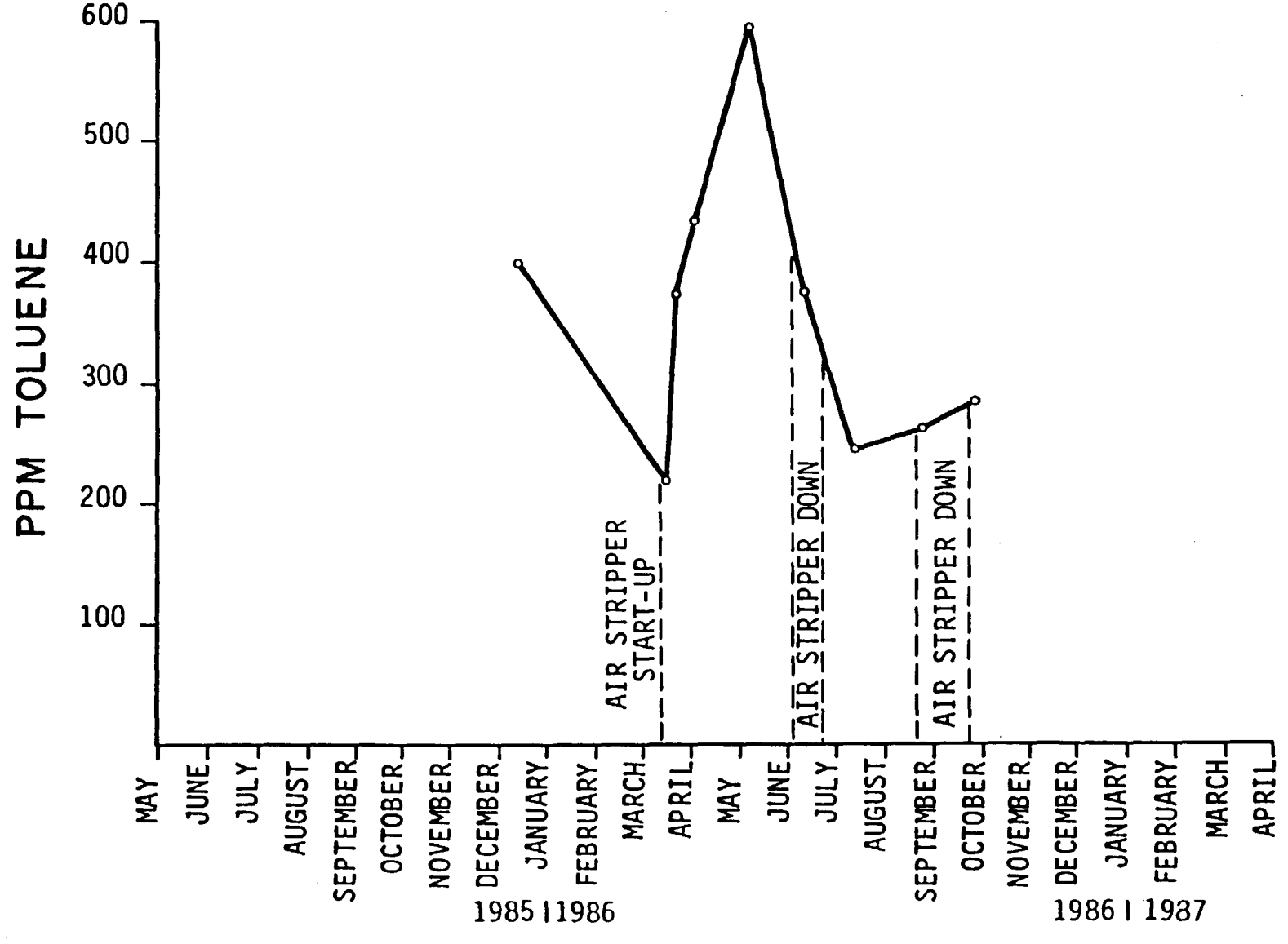
MW(5



SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

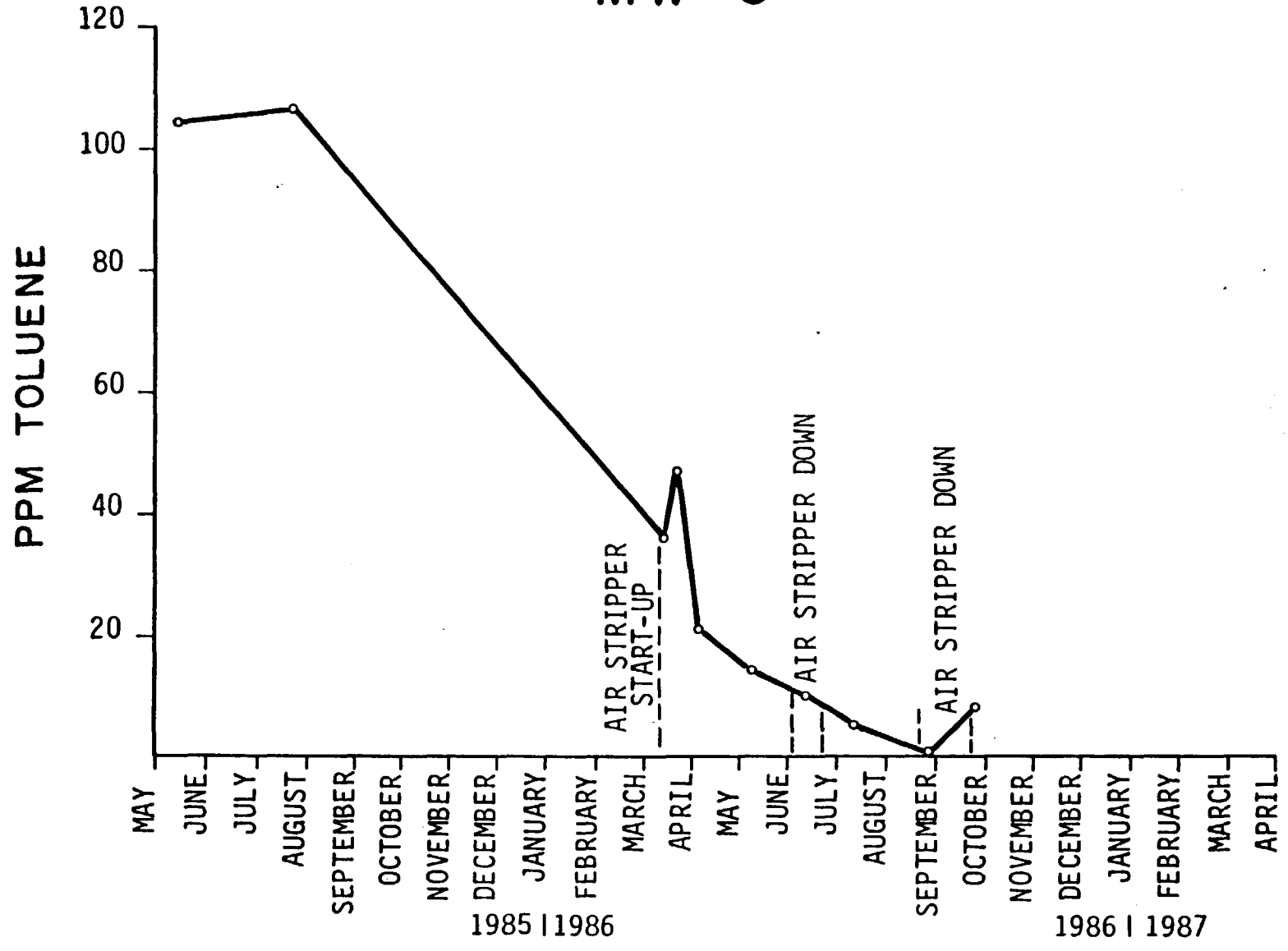


10/13/86

SUNDSTRAND AVIATION TOLUENE REMEDIAL ACTION RESULTS

FEHR, GRAHAM & ASSOCIATES
CONSULTING ENGINEERS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643

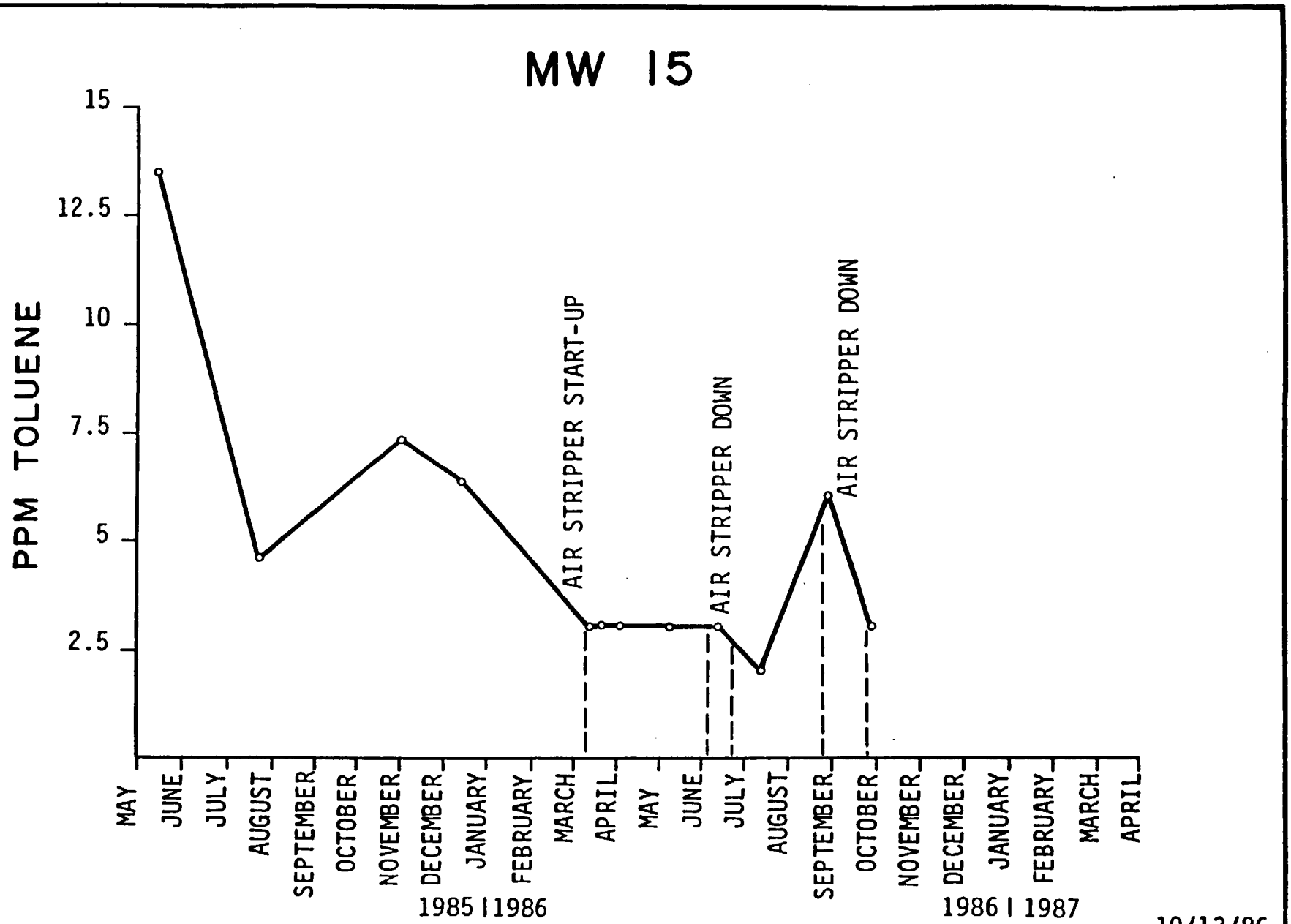
MW 5



10/13/86

SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION RESULTS

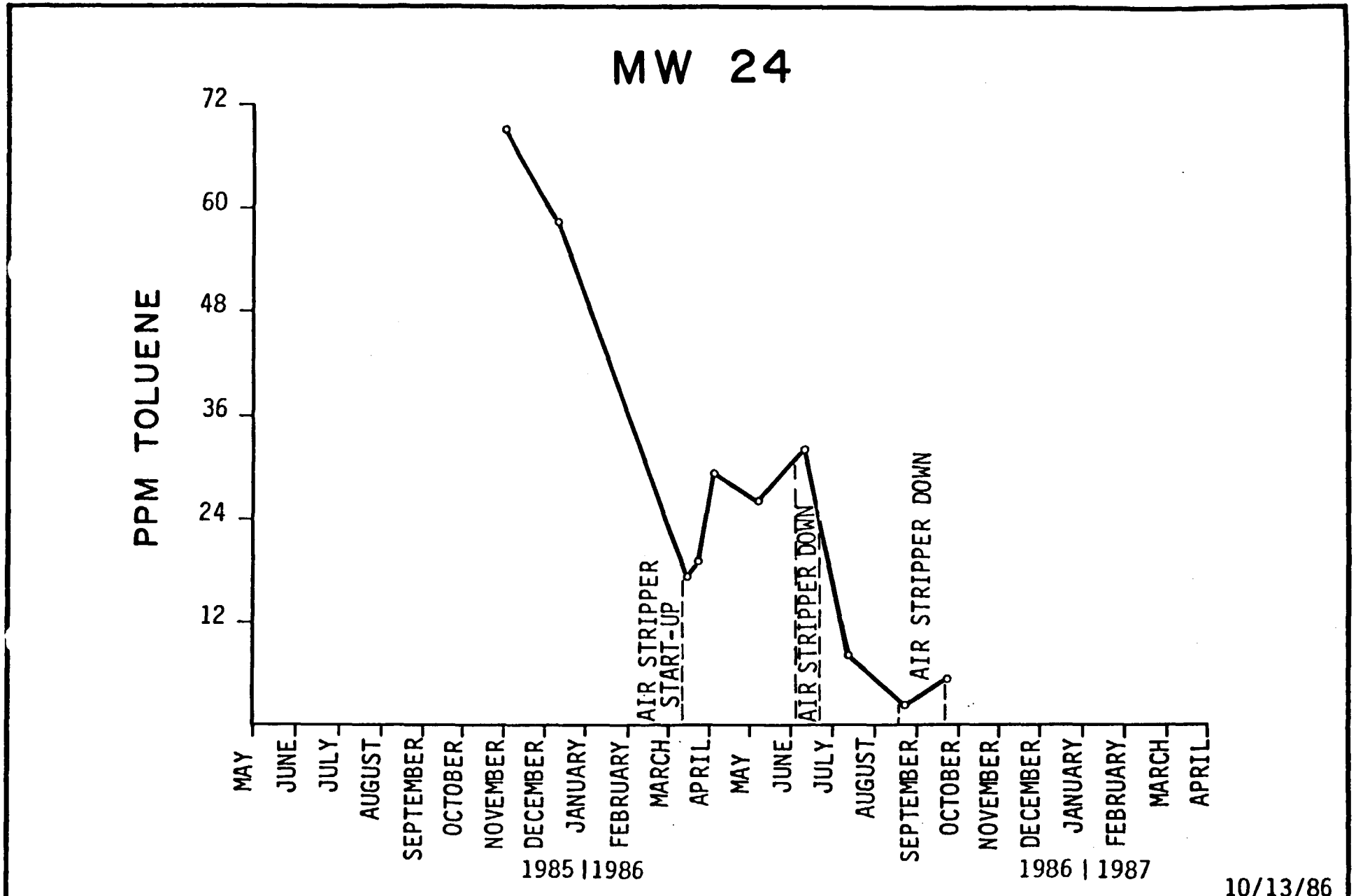
FEHR, GRAHAM & ASSOCIATES
CONSULTING ENGINEERS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643



10/13/86

SUNDSTRAND AVIATION TOLUENE REMEDIAL ACTION RESULTS

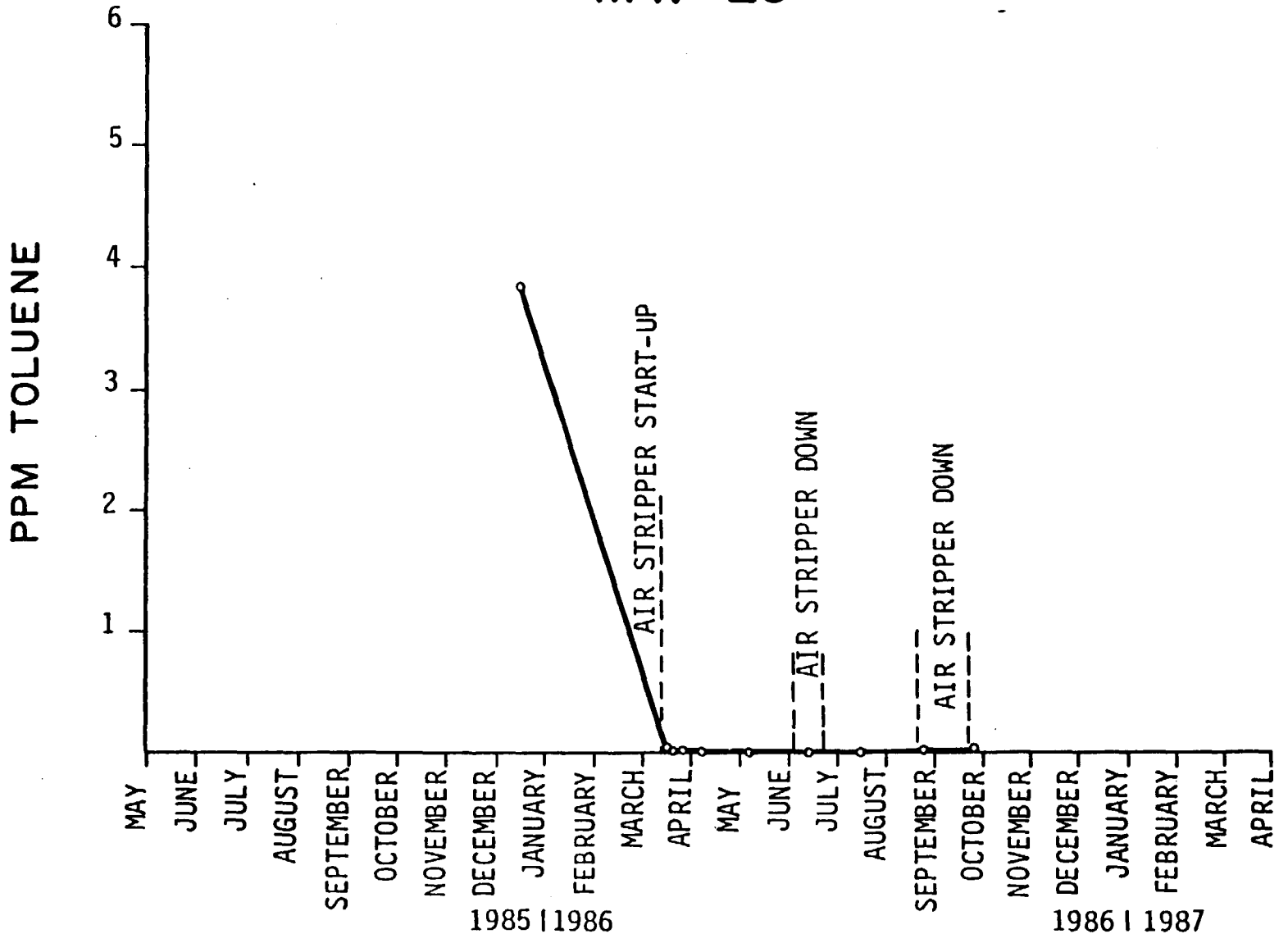
FEHR, GRAHAM & ASSOCIATES
CONSULTING ENGINEERS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643



SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION RESULTS

FEHR, GRAHAM & ASSOCIATES
CONSULTING ENGINEERS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643

MW 25



10/13/86

SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION RESULTS

FEHR, GRAHAM & ASSOCIATES
CONSULTING ENGINEERS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643

MONITORING WELL NO. 10

SAMPLE RESULTS

PROJECT Sunoco JOB NO. 26143

BOTTOM ELEVATION 757.85 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	807.37	806.50	806.68	806.54	805.71	806.79
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	51.0	48.8	49.0	51.7	52.5	54.0
	7/11/86	8/25/86**	9/25/86			
water level	805.69	804.64	804.47			
toluene	<5ppb	<5ppb	<5ppb			
temperature °F	57.1	54.4	55.4			
** Air stripper Down						

MONITORING WELL NO. 26

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 2614

BOTTOM ELEVATION 749.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/11/86**
water level	806.07	804.95	805.00	805.37	804.94	806.94
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
Temperature °F	52.1	51.8	51.9	52.8	53.2	54.7
	7/11/86	8/25/86**	9/25/86			
water level	804.20	804.60	803.11			
toluene	<5ppb	<5ppb	<5ppb			
temperature °F	54.8	53.6	55.8			
** As sampled						

MONITORING WELL NO. 25

SAMPLE RESULTS

PROJECT Sun Ostrand JOB NO. 2C143

BOTTOM ELEVATION 706.3 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	805.46	804.45	804.50	804.75	8.4.40	8:732
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	52.3	51.0	51.2	52.8	53.0	54.5
	7/11/86	8/25/86**	9/25/86			
water level	803.43	803.07	802.44			
Toluene	<5ppb	<5ppb	<5ppb			
temperature °F	54.1	53.9	54.8			
** A.S. sipper Down-						

MONITORING WELL NO. 15

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 26142

BOTTOM ELEVATION 793.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/24/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	808.80	804.99	805.08	805.45	805.49	805.50
toluene	3 ppm	3ppm	2ppm*	3ppm	3ppm	3ppm
temperature °F	53.0	52.8	53.8	55.1	58.0	58.0
	7/11/86	8/25/86**	9/25/86			
water level	804.67	804.38	804.13			
toluene	2ppm	6ppm	3ppm			
temperature °F	59.3	58.0	64.5			
*Low concentration						

**Air stripper down

MONITORING WELL NO. 24

SAMPLE RESULTS

PROJECT Sand Strand JOB NO. 26143

BOTTOM ELEVATION 768.6 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	804.01	802.76	803.14	803.20	804.03	802.79
Toluene	17ppm	19 ppm	5ppm*	29 ppm	26 ppm	32 ppm
Temperature °F	53.0	52.3	52.8	53.7	54.0	55.2
	7/11/86	8/25/86**	9/25/86			
water level	802.99	804.38	801.67			
Toluene	8ppm	2ppm	5ppm			
temperature °F	55.0	54.5	55.1			

*False readings

**Air stripper down

MONITORING WELL NO. 5

SAMPLE RESULTS

PROJECT Sundstrand JOB NO. 16143

BOTTOM ELEVATION 778.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86 **
water level	807.49	804.62	804.75	805.08	805.01	805.71
Toluene	36 ppm	47 ppm	6 ppm *	21 ppm	14 ppm	10 ppm
Temperature °F	54.8	53.4	55.1	55.2	56.3	56.9
	7/11/86	8/25/86 **	9/25/86			
water level	804.59	804.80	803.22			
Toluene	5 ppm	584 ppb	8 ppm			
Temperature °F	57.7	56.6	57.2			
* Slow recharge						

** Air stripper down

MONITORING WELL NO. 4A

SAMPLE RESULTS

PROJECT Sundstrand JOB NO. 2643

BOTTOM ELEVATION 805.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/24/86	3/27/86	4/3/86	5/7/86	** 6/1/86
water level	813.89	812.85	813.49	814.51	815.28	816.64
toluene	218 ppm	372 ppm	22 ppm *	433 ppm	591 ppm	372 ppm
Temperature °F	53.5	53.0	55.1	55.2	57.4	59.2
	7/11/86	** 8/25/86	9/25/86			
water level	814.26	813.76	815.77			
toluene	241 ppm	260 ppm	283 ppm			
temperature °F	—	61.9	61.2			

* False See Other

** Air stripper down

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

10-03-86
Sample No: SEE BELOW

SAMPLE DESCRIPTION: SEE BELOW
Water

Date Taken: SEE BELOW

Date Received: 09-25-86 1645

Toluene

MPLE DESCRIPTION	RESULTS	UNITS
42815 1001SAFB Taken: 09-25-86 1000	6.	ug/L
42816 1002SA10 Taken: 09-25-86 1130	<5.	ug/L
42817 1003SA26 Taken: 09-25-86 1315	<5.	ug/L
42818 1004SA25 Taken: 09-25-86 1420	<5.	ug/L
42819 1005SA24 Taken: 09-25-86 1450	5.	mg/L
42820 1006SA15 Taken: 09-25-86 1530	3.	mg/L
42821 1007SA5 Taken: 09-25-86 1555	8.	mg/L
42822 1008SA4A Taken: 09-25-86 1620	283.	mg/L

by GC

T. Gartner

Toni Gartner, Manager
Rockford Division

2621-130 Ridgepoint Dr.
Austin TX 78754
512-928-8905

850 West Bartlett Rd.
Bartlett, IL 60103
312-289-3100

222 South Morgan St.
Chicago, IL 60607
312-666-4469

3548 35th St.
Rockford, IL 61109
815-874-2171

850 West Bartlett Rd
Bartlett, IL 60103
312-289-3100

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

09-04-86
Sample No: SEE BELOW

SAMPLE DESCRIPTION: SEE BELOW
Water

Date Taken: SEE BELOW

Date Received: 08-25-86 1645

Toluene

MPLE DESCRIPTION	RESULTS	UNITS
42259 0859-SA10 Taken:08-25-86 0950	<5.	ug/L
42260 0860-SA26 Taken:08-25-86 1045	<5.	ug/L
42261 0861-SA25 Taken:08-25-86 1145	<5.	ug/L
42262 0862-SA15 Taken:08-25-86 1310	6.	mg/L
42263 0863-SA24 Taken:08-25-86 1340	2.	mg/L
42264 0864-SA5 Taken:08-25-86 1415	584.	ug/L
42265 0865-SA4A Taken:08-25-86 1445	260.	mg/L
42266 0866-SAFB Taken:08-25-86 0920	6.	ug/L

T. Gartner
Toni Gartner, Manager
Rockford Division

Corporate Office: 850 West Bartlett Rd. Bartlett IL 60103 312-289-3100

Austin Division
9909 Burnet Rd.
Austin TX 78758
512-835-4980

Bartlett Division
850 West Bartlett Rd.
Bartlett IL 60103
312-289-3100

Rosner/Runyon Division
222 South Morgan St.
Chicago IL 60607
312-666-4469

Rockford Division
3548 35th St.
Rockford IL 61109
815-874-2171

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41436

SAMPLE DESCRIPTION: 0817-SA4A, Groundwater

Date Taken: 07-11-86 1450

Date Received: 07-11-86 1545

Toluene	241	mg/L

Tony Gartner, Manager
Rockford Division

Corporate Office: 850 West Bartlett Rd. Bartlett IL 60103 312-289-3100

Austin Division
9909 Burnet Rd.
Austin TX 78758
512-835-4980

Bartlett Division
850 West Bartlett Rd.
Bartlett IL 60103
312-289-3100

Rosner/Runyon Division
222 South Morgan St.
Chicago IL 60607
312-666-4469

Rockford Division
3548 35th St.
Rockford IL 61109
815-874-2171

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41437

SAMPLE DESCRIPTION: 0818-SAFB, Groundwater

Date Taken: 07-11-86 0930 Date Received: 07-11-86 1545

Toluene	7	ug/L

Toni Gartner, Manager
Rockford Division

Corporate Office: 850 West Bartlett Rd. Bartlett IL 60103 312-289-3100

Austin Division
9909 Burnet Rd.
Austin TX 78758
512-835-4980

Bartlett Division
850 West Bartlett Rd.
Bartlett IL 60103
312-289-3100

Rosner/Runyon Division
222 South Morgan St.
Chicago IL 60607
312-666-4469

Rockford Division
3548 35th St.
Rockford IL 61109
815-874-2171

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41430

SAMPLE DESCRIPTION: 0811-SA10, Groundwater

Date Taken: 07-11-86 1002 Date Received: 07-11-86 1545

Toluene	<5.	ug/L

Toni Gartner, Manager
Rockford Division

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41431

SAMPLE DESCRIPTION: 0812-SA26, Groundwater

Date Taken: 07-11-86 1055

Date Received: 07-11-86 1545

Toluene	<5.	ug/L

Toni Gartner, Manager
Rockford Division

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41432

SAMPLE DESCRIPTION: 0813-SA25, Groundwater

Date Taken: 07-11-86 1155

Date Received: 07-11-86 1545

Toluene	<5.	ug/L

T. Gartner

Toni Gartner, Manager
Rockford Division

Corporate Office: 850 West Bartlett Rd. Bartlett IL 60103 312-289-3100

Austin Division
9909 Burnet Rd.
Austin TX 78758
512-835-4980

Bartlett Division
850 West Bartlett Rd.
Bartlett IL 60103
312-289-3100

Rosner/Runyon Division
222 South Morgan St.
Chicago IL 60607
312-666-4469

Rockford Division
3548 35th St.
Rockford IL 61109
815-874-2171

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41433

SAMPLE DESCRIPTION: 0814-SA15, Groundwater

Date Taken: 07-11-86 1330

Date Received: 07-11-86 1545

Toluene	2	mg/L

Toni Gartner, Manager
Rockford Division

Corporate Office: 850 West Bartlett Rd. Bartlett IL 60103 312-289-3100

Austin Division
9909 Burnet Rd.
Austin TX 78758
512-835-4980

Bartlett Division
850 West Bartlett Rd.
Bartlett IL 60103
312-289-3100

Rosner/Runyon Division
222 South Morgan St.
Chicago IL 60607
312-666-4469

Rockford Division
3548 35th St
Rockford IL 61109
815-874-2171

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41434

SAMPLE DESCRIPTION: 0815-SA24, Groundwater

Date Taken: 07-11-86 1400 Date Received: 07-11-86 1545

Toluene	8	mg/L

Toni Gartner, Manager
Rockford Division

Corporate Office: 850 West Bartlett Rd. Bartlett IL 60103 312-289-3100

Austin Division
9909 Burnet Rd.
Austin TX 78758
512-835-4980

Bartlett Division
850 West Bartlett Rd.
Bartlett IL 60103
312-289-3100

Rosner/Runyon Division
222 South Morgan St.
Chicago IL 60607
312-666-4469

Rockford Division
3548 35th St.
Rockford IL 61109
815-874-2171

aqualab inc.
3548 35th St.
Rockford IL 61109
815-874-2171

ANALYTICAL REPORT

Mr. Ken Beach
FEHR, GRAHAM, & ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

18 June 1986
Sample No. 40814-21

SAMPLE DESCRIPTION: Water
P.O. 26143
Date Taken: 06-10-86

Date Received: 06-10-86

Sample Number	Time Taken	Sample Description	Toluene*
40814	1015	0723-SAFB	<5. ug/L
40815	1055	0724-SA10	<5. ug/L
40816	1145	0725-SA26	<5. ug/L
40817	1355	0726-SA25	<5. ug/L
40818	1425	0727-SA15	3. mg/L
40819	1500	0728-SA24	32. mg/L
40820	1528	0729-SA5	10. mg/L
40821	1600	0730-SA4A	372.mg/L

Toni Gartner

Rec'd 5/27
TK

aqualab inc.
3548 35th St.
Rockford IL 61109
815-874-2171

ANALYTICAL REPORT

Mr. Toby Kirk
FEHR, GRAHAM, & ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

21 May 1986
Sample No. 40205-12

SAMPLE DESCRIPTION: P.O. 26143
Water (grab)
Date Taken: 05-07-86

Date Received: 05-07-86 1520

Time Taken	Sample Description	*Toluene
0920	0662-SAFB	10. ug/L
0958	0663-SA10	5. ug/L
1045	0664-SA26	<5. ug/L
1137	0665-SA25	<5. ug/L
1325	0666-SA15	3. mg/L
1353	0667-SA24	26. mg/L
1425	0668-SA5	14. mg/L
1453	0669-SA4A	591.mg/L

Note varying units.

Toni Gartner

aqualab inc.

ANALYTICAL REPORT

Mr. Ken Beach
FEHR,GRAHAM,& ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

07-23-86
Sample No: 41435

SAMPLE DESCRIPTION: 0816-SA5, Groundwater

Date Taken: 07-11-86 1425

Date Received: 07-11-86 1545

Toluene	5	mg/L

Toni Gartner, Manager
Rockford Division

Corporate Office: 850 West Bartlett Rd. Bartlett IL 60103 312-289-3100

Austin Division
9909 Burnet Rd.
Austin TX 78758
512-835-4980

Bartlett Division
850 West Bartlett Rd.
Bartlett IL 60103
312-289-3100

Rosner/Runyon Division
222 South Morgan St.
Chicago IL 60607
312-666-4469

Rockford Division
3548 35th St.
Rockford IL 61109
815-874-2171

aqualab inc.
3548 35th St.
Rockford IL 61109
815-874-2171

ANALYTICAL REPORT

Mr. Ken Beach
FEHR, GRAHAM, & ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

11 April 1986
Sample No. 39612-19

SAMPLE DESCRIPTION: P.O. 26143
Groundwater, grab
Date Taken: 04-03-86

Date Received: 04-03-86 1615

Time Taken	Sample Description	*Toluene
1025	0636-SA-10	6. ug/L
1125	0637-SA-26	14. ug/L
1400	0638-SA-25	10. ug/L
1430	0639-SA-15	3. mg/L
1500	0640-SA-24	29. mg/L
1525	0641-SA-5	21. mg/L
1550	0642-SA-4A	433.mg/L
0945	0643-SA-FB	36. ug/L

*Note varying units.

Tom Gartner

aqualab inc.
3548 35th St.
Rockford IL 61109
815-874-2171

ANALYTICAL REPORT

Mr. Ken Beach
FEHR, GRAHAM, & ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

11 April 1986
Sample No. 39463-70

SAMPLE DESCRIPTION: P.O. 25226
Groundwater, grab
Date Taken: 03-27-86

Date Received: 03-27-86 1610

Time Taken	Sample Description	*Toluene
0955	0628-SA-10	12. ug/L
1045	0629-SA-26	16. ug/L
1200	0630-SA-25	14. ug/L
1405	0631-SA-15	2. mg/L
1440	0632-SA-24	5. mg/L
1520	0633-SA-5	6. mg/L
1550	0634-SA-4A	22. mg/L
0925	0635-SA-FB	18. ug/L

*Note varying units.

Toni Gartner

aqualab inc.
3548 35th St.
Rockford IL 61109
815-874-2171

ANALYTICAL REPORT

Mr. Ken Beach
FEHR, GRAHAM, & ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

10 April 1986
Sample No. 39355-62

SAMPLE DESCRIPTION: P.O. 25226

Date Taken: 03-20-86

Date Received: 03-20-86 1550

Time Taken	Sample Description	*Toluene
1000	0620-SA-10	15. ug/L
1050	0621-SA-26	9. ug/L
1145	0622-SA-25	7. ug/L
1315	0623-SA-15	3. mg/L
1350	0624-SA-24	19. mg/L
1420	0625-SA-5	47. mg/L
1440	0626-SA-4A	372. mg/L
0930	0627-SA-FB	27. ug/L

*Note varying units.

Toni Gartner

aqualab inc.
3548 35th St.
Rockford IL 61109
815-874-2171

ANALYTICAL REPORT

Mr. Ken Beach
FEHR, GRAHAM, & ASSOCIATES
660 W. Stephenson Street
Freeport IL 61032

25 March 1986
Sample No. 39212-19

SAMPLE DESCRIPTION: P.O. 25226

Date Taken: 03-13-86

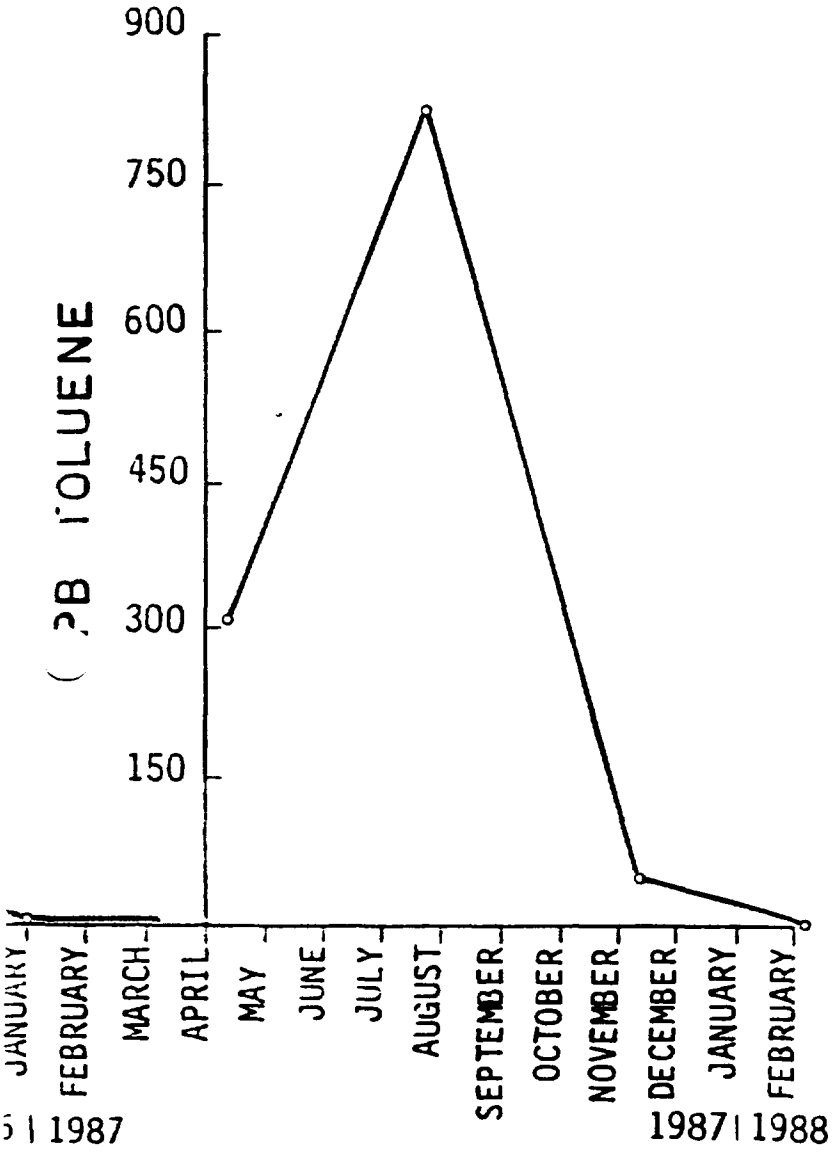
Date Received: 03-13-86 1607

Time Taken	Sample Description	*Toluene
1040	0571-SA-10	<5. ug/L
1135	0572-SA-26	<5. ug/L
1405	0573-SA-25	<5. ug/L
1430	0574-SA-24	17. mg/L
1450	0575-SA-15	3. mg/L
1520	0576-SA-5	36. mg/L
1545	0577-SA-4A	218.mg/L
0950	0578-SA-FB	<5. ug/L

*Note varying units.

Toni Gartner

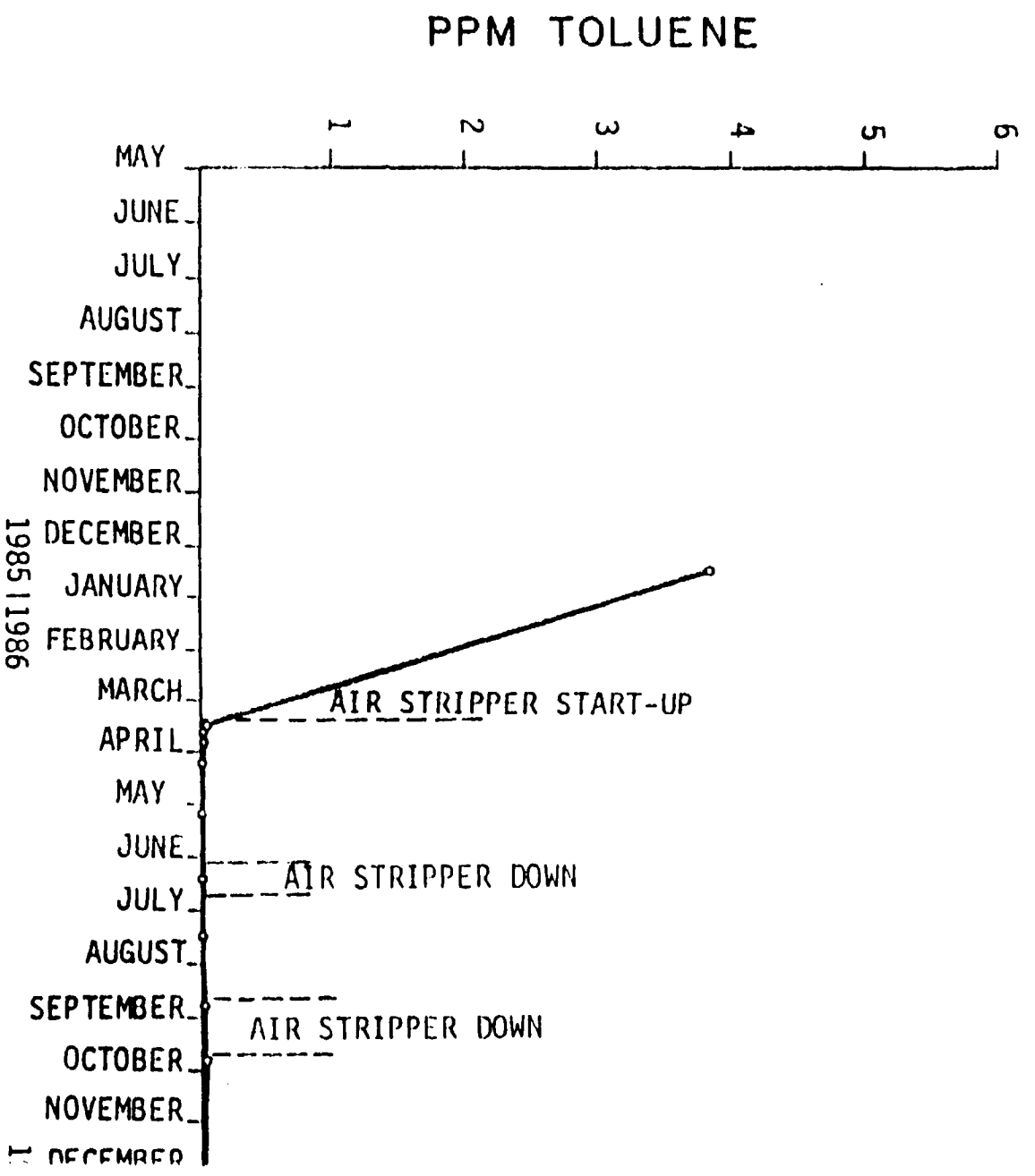
MW 24



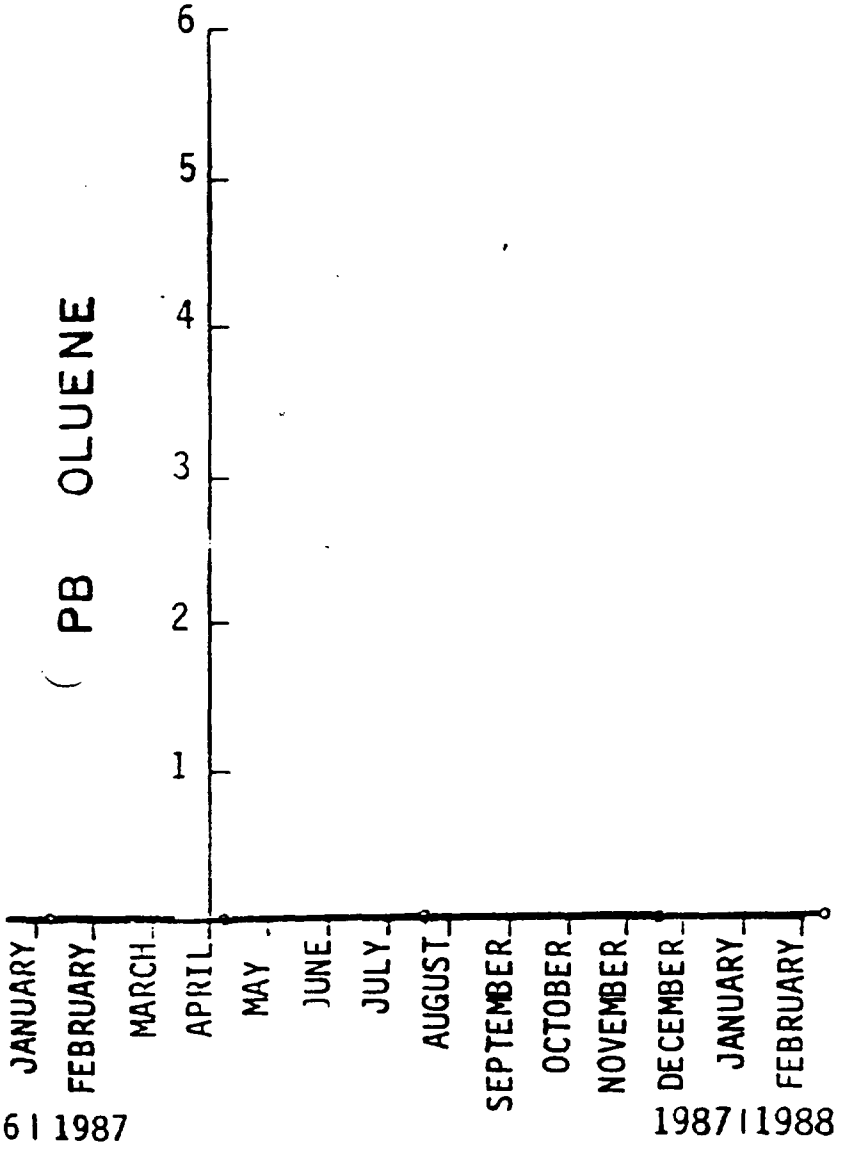
4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

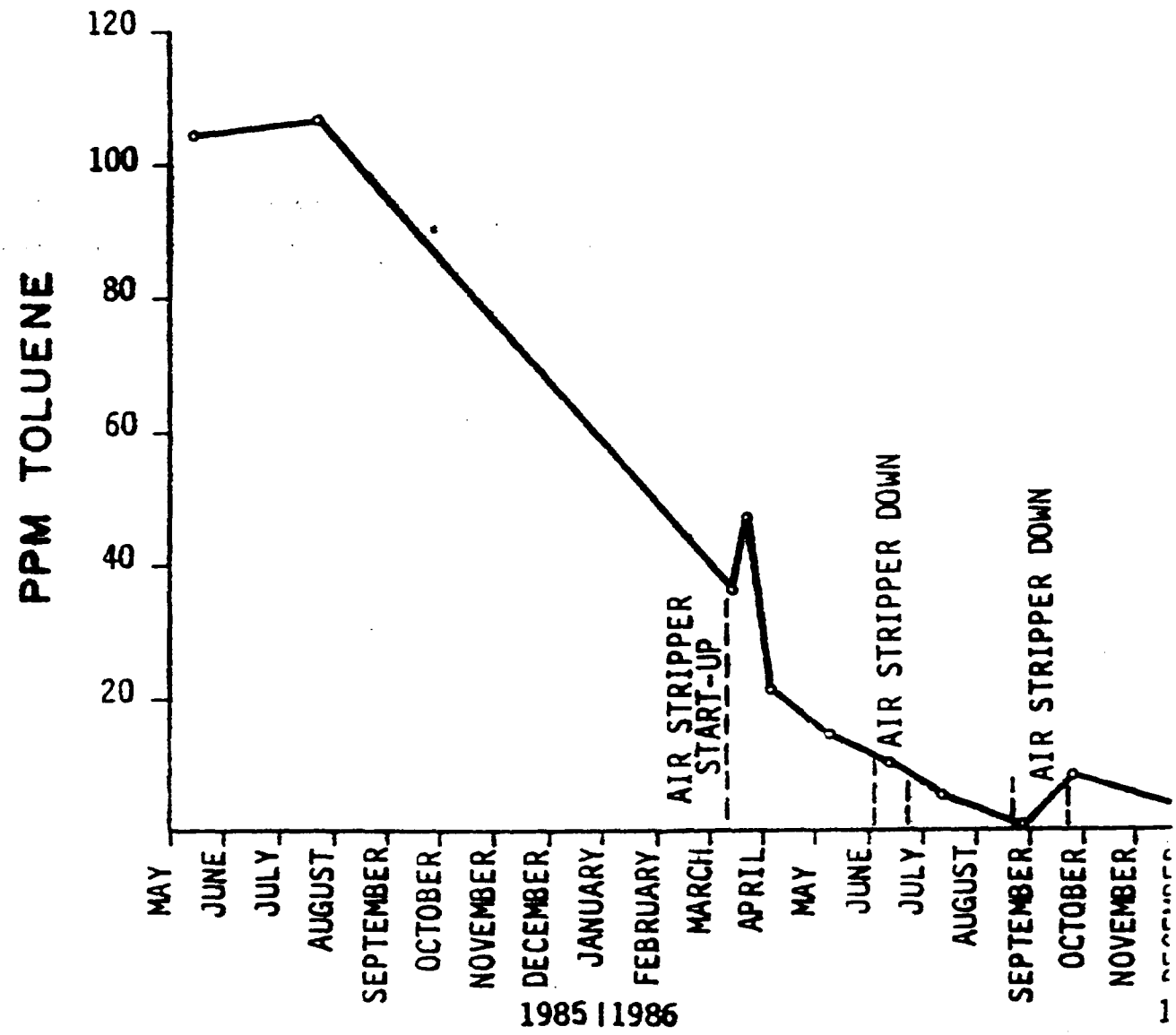


MW 25



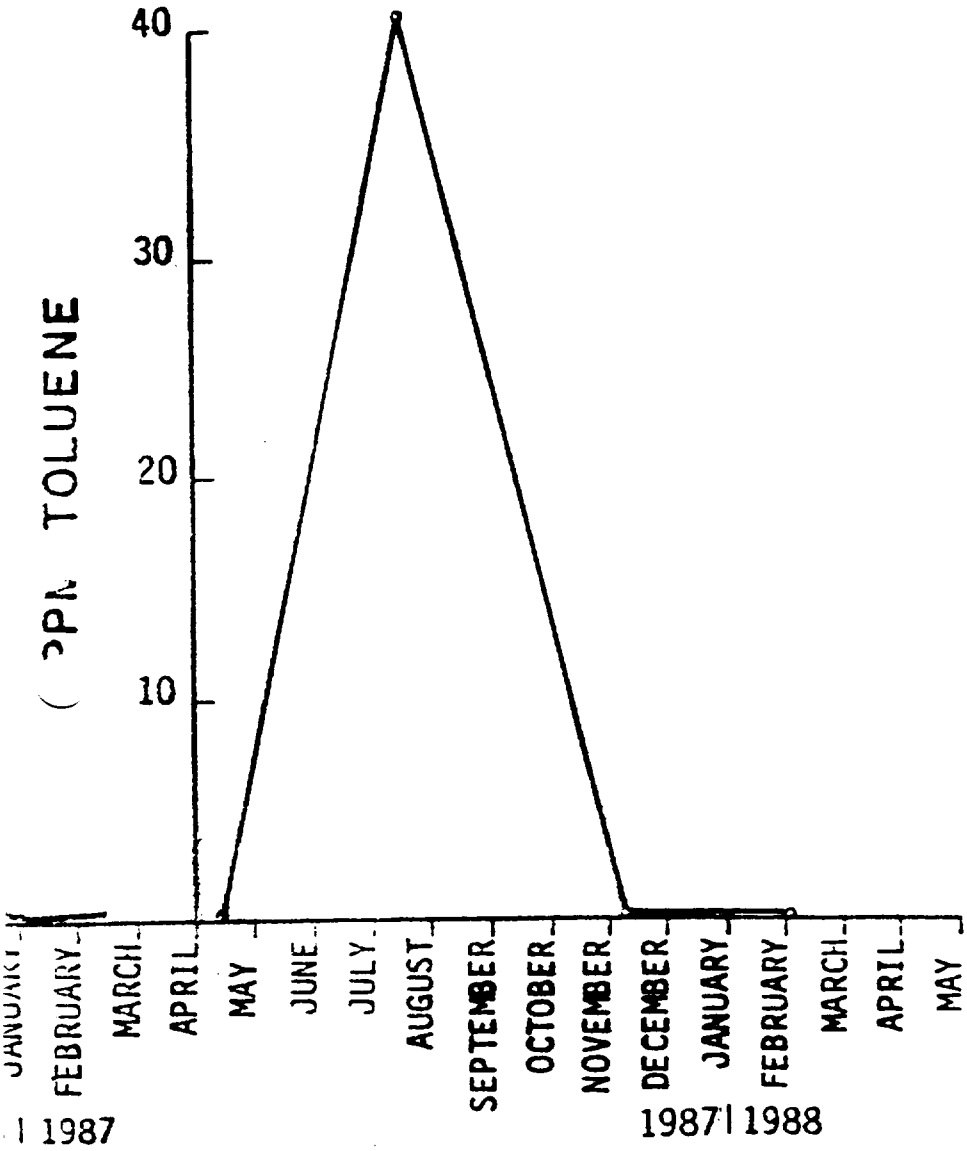
4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098



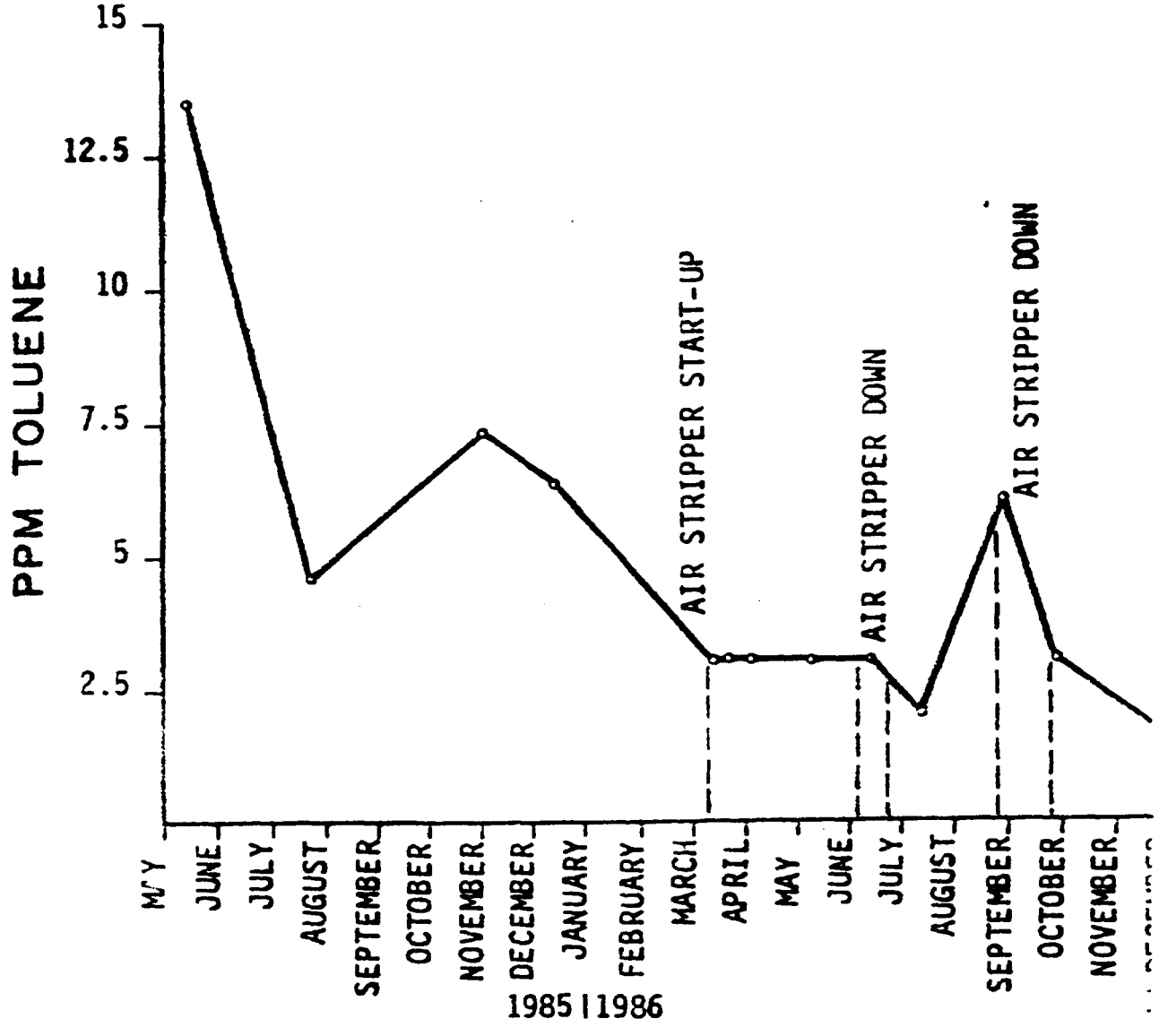
SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

MW 5



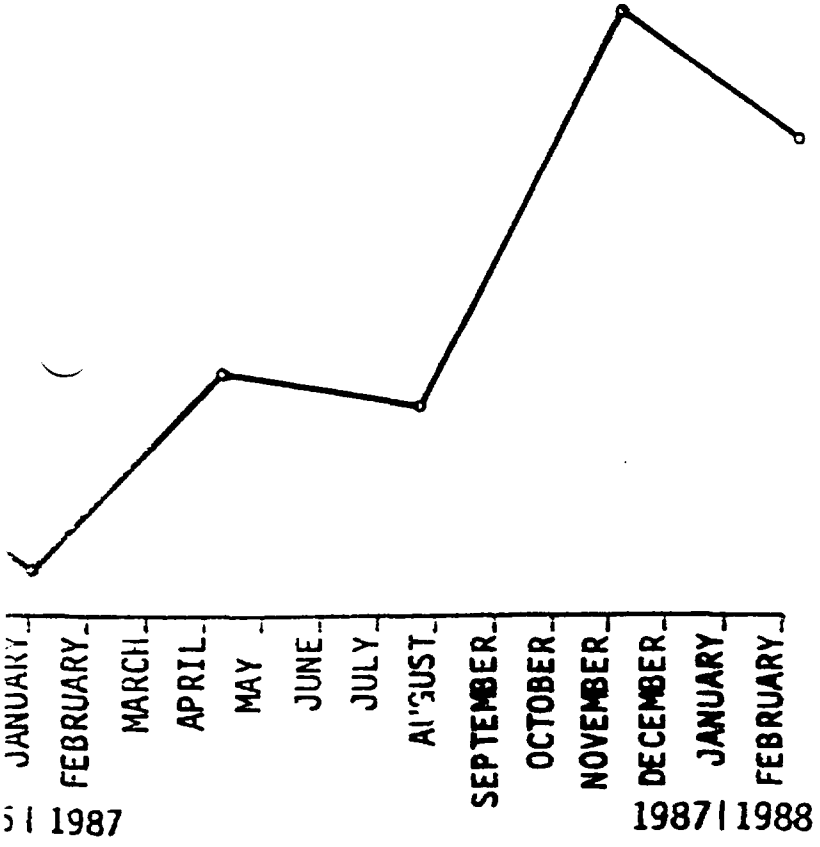
4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098



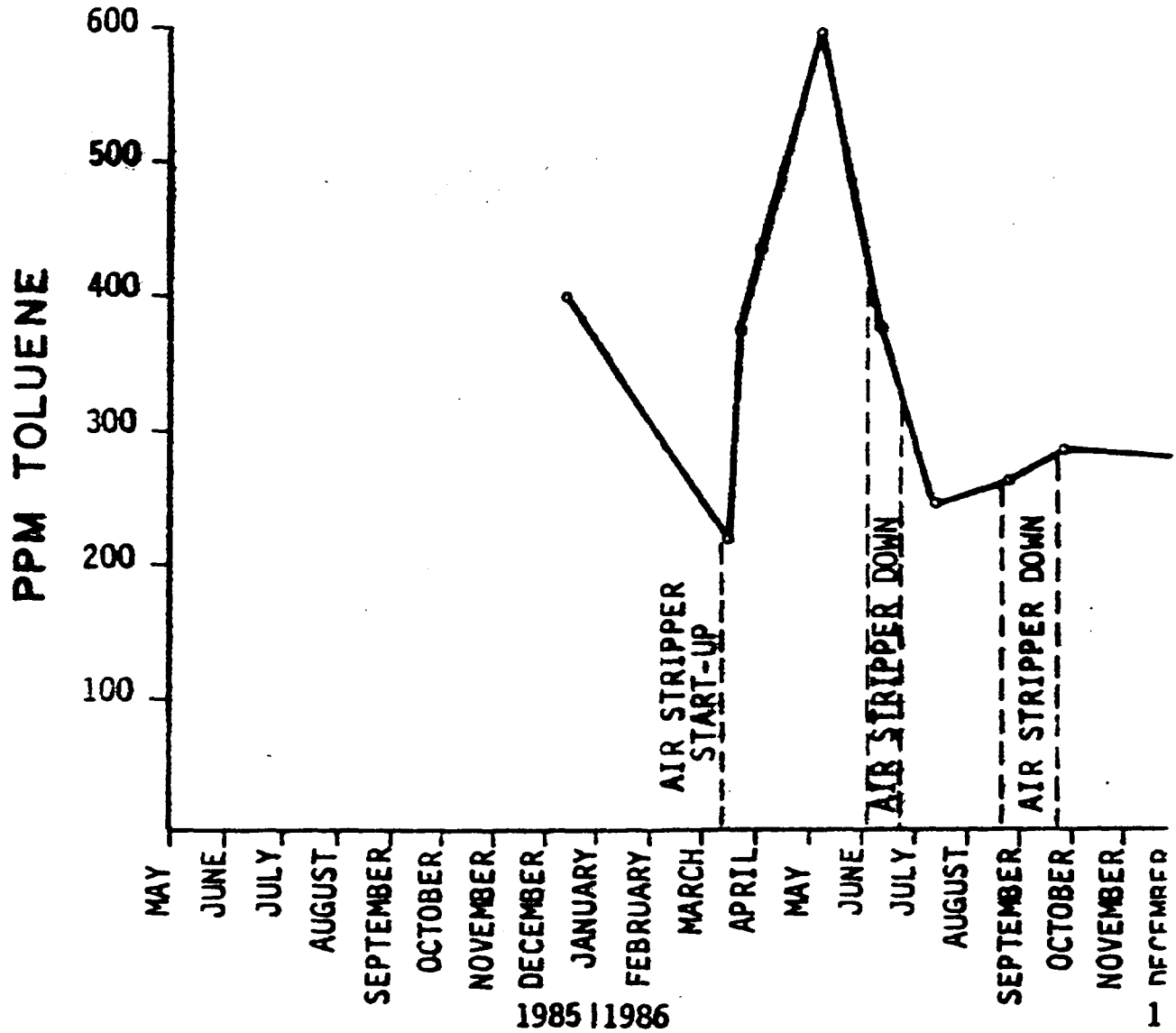
SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

MW 15



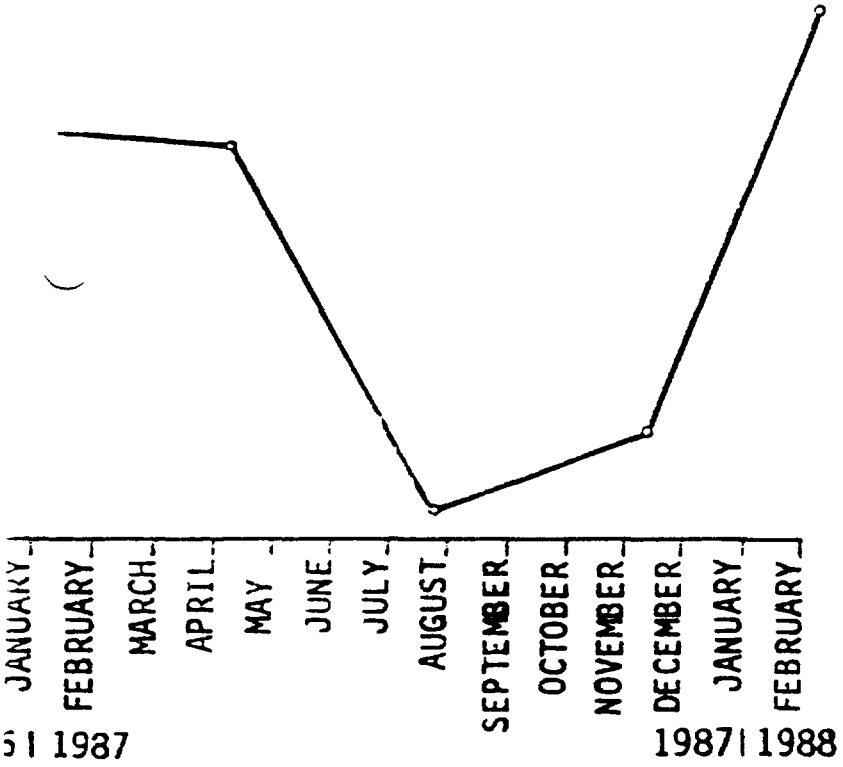
4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098



SUNDSTRAND AVIATION
TOLUENE REMEDIAL ACTION
RESULTS

MW 4A



4/11/88

FEHR-GRAHAM & ASSOCIATES
ENGINEERING AND SCIENCE CONSULTANTS
660 W. STEPHENSON ST., FREEPORT, ILLINOIS
815/235-7643 61032-5098

MONITORING WELL NO. 10

SAMPLE RESULTS

PROJECT Sunoco JOB NO. 26143

BOTTOM ELEVATION 757.85 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	807.37	806.50	806.68	806.54	805.71	806.79
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	51.0	48.8	49.0	51.7	52.5	54.0
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	805.69	804.64	804.47	804.70	803.44	803.00
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	57.1	54.4	55.4	50.0	52.4	55.0
	11/6/87	2/1/88				
water level	803.74	804.71				
toluene	<1ppb	<1ppb				
temperature °F	51.1	—				
**						

MONITORING WELL NO. 26

SAMPLE RESULTS

PROJECT Sun Ostrand JOB NO. 26145

BOTTOM ELEVATION 749.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/96	3/20/96	3/27/96	4/3/96	5/7/96	6/6/96**
water level	806.07	804.95	805.00	805.52	804.94	806.94
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	52.1	51.8	51.9	52.8	53.2	54.7
	7/11/96	8/15/96**	9/25/96	11/21/97	4/9/97	7/21/97
water level	804.20	804.60	803.11	803.34	801.09	801.13
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	54.8	53.6	55.8°	48.2°	53.1	54.8
toluene	<1ppb	<1ppb				
temperature °F	51.2	49.5				
**						

MONITORING WELL NO. 25

SAMPLE RESULTS

PROJECT Sun Ostrand JOB NO. 26143

BOTTOM ELEVATION 760.3 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	805.46	804.45	804.50	804.75	804.62	804.32
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	52.3	51.0	51.2	52.8	53.6	54.5
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	803.43	803.07	802.44	802.49	802.09	802.47
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	54.1	53.9	54.8	50.9°	53.0	54.5
	11/10/87	1/15/88				
water level	802.15	805.76				
toluene	<1ppb	<1ppb				
temperature °F	51.9	50.4				
**						

MONITORING WELL NO. 24

SAMPLE RESULTS

PROJECT Sanitas and JOB NO. 26143

BOTTOM ELEVATION 768.6 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	804.01	802.76	803.14	803.20	804.03	803.79
Toluene	13 ppm	9 ppm	5 ppm*	29 ppm	26 ppm	32 ppm
Temperature °F	53.0	52.3	52.8	53.7	54.0	55.2
	7/11/86	8/12/86**	9/25/86	1/8/87	4/9/87	7/24/87
water level	802.99	804.38	801.67	802.35	800.54	801.05
Toluene	8 ppm	2 ppm	5 ppm	128 ppb	307 ppb	832 ppb
Temperature °F	55.0	54.5	55.1	51.0	53.8	55.2
	illegible					
water level	illegible					
Toluene	illegible					
Temperature °F	illegible					

illegible

MONITORING WELL NO. 15

SAMPLE RESULTS

PROJECT Sundstrand JOB NO. 26143

BOTTOM ELEVATION 793.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/24/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	808.50	804.99	805.08	805.45	805.49	805.50
toluene	3 ppm	3 ppm	2 ppm*	3 ppm	3 ppm	3 ppm
temperature °F	53.0	52.8	53.9	55.1	58.0	58.0
	7/11/86	8/25/86**	9/25/86	1/3/87	4/9/87	7/31/87
water level	804.67	804.38	804.13	803.90	801.87	803.07
toluene	2 ppm	6 ppm	3 ppm	7.6 ppb	4.2 ppm	3.5 ppm
temperature °F	59.3	58.0	64.5	49.5	—	61.8
	11/4/87	2/1/88				
water level	803.47	803.96				
toluene	6.2 ppm	9 ppm				
temperature °F	52.5	—				

MONITORING WELL NO. 5

SAMPLE RESULTS

PROJECT Sunoco JOB NO. 26143

BOTTOM ELEVATION 778.4 GEOLOGICAL FORMATION Dolomite

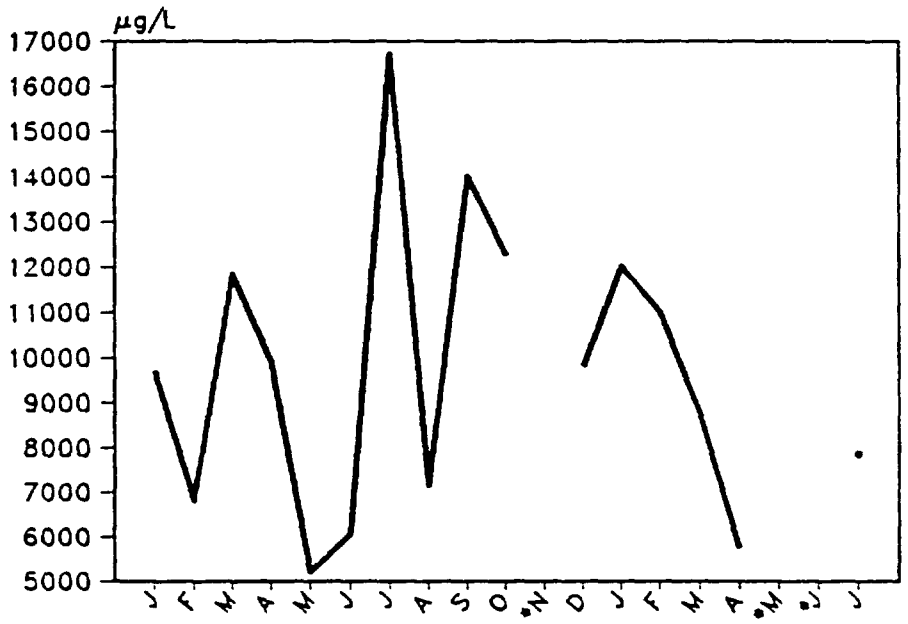
PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	**11/3/86
water level	807.49	804.62	804.75	805.08	805.61	805.71
Toluene	36 ppm	47 ppm	6 ppm*	21 ppm	14 ppm	10 ppm
Temperature °F	54.8	53.4	55.1	55.2	56.3	56.9
	7/11/86	**9/25/86	9/25/86	1/8/87	4/9/87	7/6/87
water level	804.59	804.80	803.22	803.23	805.15	805.19
Toluene	5 ppm	584 ppb	8 ppm	52 ppb	252 ppb	96.4 ppb
Temperature °F	57.7	56.6	57.2	53.8	56.5	56.8
	10/6/87	12/16/87				
water level	803.43	804.43				
Toluene	22 ppb	12 ppb				
Temperature °F	-	-				

*Below detection limit

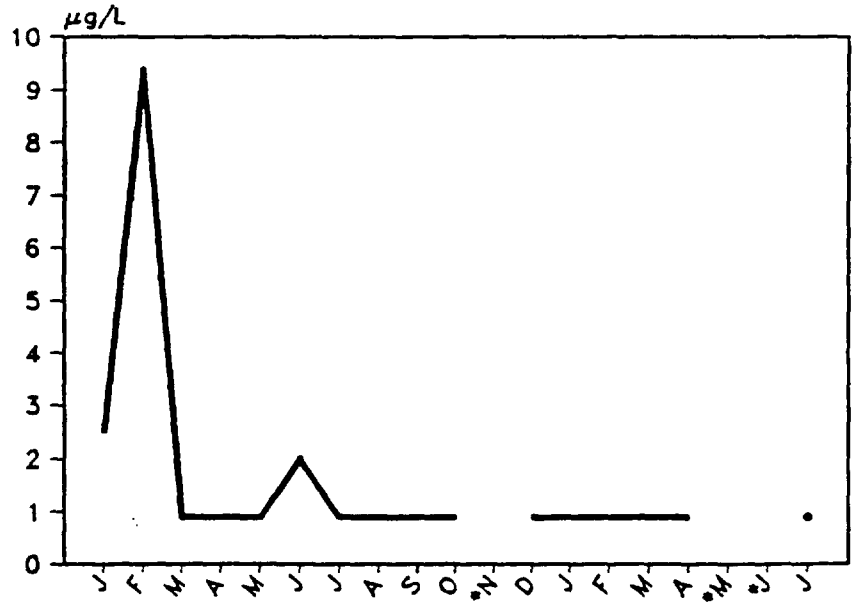
Air Stripping Tower Performance

TOLUENE

Combined Influent $\mu g/L$ (ppb)



Effluent $\mu g/L$ (ppb)



1987 * = No Samples taken 1988
For that Month

MONITORING WELL NO. 24

SAMPLE RESULTS

PROJECT San Gabriel JOB NO. 26143

BOTTOM ELEVATION 768.6 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/31/86	3/20/86	3/27/86	4/7/86	5/7/86	6/11/86**
water level	804.01	802.76	803.14	803.20	804.03	802.79
Toluene	17ppm	9 ppm	5ppm*	29 ppm	26 ppm	32ppm
Temperature °F	53.0	52.3	52.8	53.7	54.2	55.2
	7/11/86	8/25/86**	9/25/86	1/8/87	4/9/87	7/21/87
water level	802.99	804.38	801.67	802.35	800.54	801.05
Toluene	8ppm	2ppm	5 ppm	128ppb	307ppb	820ppb
temperature °F	55.0	54.5	55.1	51.0	53.9	55.2
	11/10/87	21.1/88	5/25/88			
water level	801.77	800.57	803.15			
Toluene	47ppb	8.6ppb	<1ppb			
Temperature °F	52.9	50.1	54.6			

*false reading

**Air stripper down

MONITORING WELL NO. 25

SAMPLE RESULTS

PROJECT Sani Ostrand JOB NO. 26143

BOTTOM ELEVATION 706.3 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/92	3/20/92	3/27/92	4/3/92	5/7/92	5/11/92**
water level	805.46	804.45	804.50	804.75	804.00	804.32
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
Temperature °F	52.3	51.0	51.2	52.8	53.0	54.5
	7/11/92	8/25/92**	9/25/92	11/2/92	4/9/93	7/21/93
water level	803.43	803.07	802.44	802.49	800.00	800.45
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	54.1	53.9	54.8	50.9°	53.0	54.5
	11/10/93	2/1/94	5/25/94			
water level	801.15	805.46	803.17			
toluene	<1ppb	<1ppb	<1ppb			
temperature °F	51.9	50.4	53.5			
** Air sparger down						

MONITORING WELL NO. 15

SAMPLE RESULTS

PROJECT Sandstrand JOB NO. 26142

BOTTOM ELEVATION 793.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	7/24/86	3/27/86	4/21/86	5/7/86	6/10/86**
water level	809.50	804.99	805.08	805.45	805.40	805.50
toluene	3 ppm	3 ppm	2 ppm*	3 ppm	3 ppm	3 ppm
temperature °F	53.0	52.8	53.8	55.1	52.0	50.0
	7/11/86	8/25/86**	9/25/86	1/5/87	4/9/87	7/31/87
water level	804.67	804.38	804.13	803.90	801.87	803.07
toluene	2 ppm	6 ppm	3 ppm	3.6 ppm	4.2 ppm	3.5 ppm
temperature °F	59.3	58.0	64.5	49.5	—	61.8
	11/4/87	2/1/88	5/25/88			
water level	803.47	803.98	805.09			
toluene	10.2 ppm	8.1 ppm	7 ppm			
temperature °F	52.5	—	56.9			
*false reading						

MONITORING WELL NO. 5

SAMPLE RESULTS

PROJECT Sunderland JOB NO. 16143

BOTTOM ELEVATION 778.4 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/7/86	5/7/86	6/10/86
water level	807.49	804.62	804.25	803.06	802.81	802.71
Toluene	36 ppm	43 ppm	6 ppm*	21 ppm	14 ppm	10 ppm
Temperature °F	54.8	53.4	55.1	55.2	56.3	56.9
	7/11/86	8/25/86**	9/25/86	11/3/87	4/19/87	7/21/87
water level	804.59	804.90	803.22	803.23	802.15	801.19
Toluene	5 ppm	584 ppb	8 ppm	52 ppb	252 ppb	40.4 ppm
Temperature °F	57.7	56.6	57.2	53.9	56.5	56.4
	11/10/87	2/18/88	5/27/88			
water level	802.43	803.42	804.59			
Toluene	22 ppb	12 ppb	10 ppb			
Temperature °F	—	—	57.0			

*false reading

MONITORING WELL NO. 4A

SAMPLE RESULTS

PROJECT Sundstrand JOB NO. 26143

BOTTOM ELEVATION 805.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/24/86	3/27/86	4/3/86	5/7/86	** 6/16/86
water level	813.89	812.85	813.49	814.51	815.28	816.64
Toluene	218 ppm	372 "	22 " *	433 "	591 "	372 ppm
Temperature °F	53.5	53.0	55.1	55.2	57.4	59.2
	7/11/86	** 8/25/86	9/25/86	*** 1/8/87	bailer 4/9/87	7/21/87**
water level	814.26	813.76	815.77	812.01	806.60	810.39
toluene	241 ppm	260 ppm	283 ppm	—	272 ppm	20.2 ppm
temperature °F	—	61.9	61.2	—	—	—
	11/6/87	2/1/88	5/25/88			
water level	814.34	813.93	814.77			
toluene	73.9 ppm	350 ppm	223 ppm			
temperature °F	—	—	57.7			
* False see [illegible]						

** Air stripper down ***Pump and bailer wouldn't go down well

MONITORING WELL NO. 26

SAMPLE RESULTS

PROJECT Sanitarium JOB NO. 26143

BOTTOM ELEVATION 749.1 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13/86	3/20/86	3/27/86	4/3/86	5/7/86	6/10/86**
water level	806.67	801.95	805.06	805.52	804.94	806.94
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	52.1	51.8	51.9	52.8	53.2	54.7
	7/11/86	8/12/86**	9/23/86	11/21/86	4/9/87	3/31/87
water level	804.20	804.60	803.11	803.34	804.09	806.13
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	54.8	53.6	55.8°	48.2°	53.1	54.8
	11/10/87	2/11/88	5/25/88			
water level	803.27	804.50	807.97			
toluene	<1ppb	<1ppb	<1ppb			
temperature °F	51.2	49.5	—			
** Air stripper down						

MONITORING WELL NO. 10

SAMPLE RESULTS

PROJECT Sunoco JOB NO. 26143

BOTTOM ELEVATION 757.85 GEOLOGICAL FORMATION Dolomite

PARAMETER	DATE	DATE	DATE	DATE	DATE	DATE
	3/13	3/20/86	3/27/86	4/7/87	5/7/86	6/10/86**
water level	806.37	806.50	806.68	806.54	805.71	806.79
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb
temperature °F	51.0	48.5	49.0	51.7	52.5	54.0
	7/11/86	8/25/86**	9/25/86	10/27/86	4/9/87	7/21/87
water level	805.19	804.64	804.47	804.30	803.44	803.00
toluene	<5ppb	<5ppb	<5ppb	<5ppb	<5ppb	<1ppb
temperature °F	57.1	54.4	55.4	50.0	52.4	55.0
	11/4/87	2/1/88	5/25/88			
water level	803.74	804.71	805.29			
toluene	<1ppb	<1ppb	<1ppb			
temperature °F	51.1	—	53.1			

** Air stripper down